

COMMODORE POISED TO REPLACE APPLE II

New computer announced

Commodore recently announced a new addition to their range of microcomputers and again Commodore has broken the price/performance barrier. Called the Commodore 64, this new personal computer offers many new and advanced features at a fraction of the cost of competitive computers. The Apple II personal computer is the closest rival to the Commodore 64, but when price and features are compared, Commodore is confident the Commodore 64 will replace the Apple II as an alternative to users wanting the features of colour, high resolution graphics and sound, all at a realistic price.

The Commodore 64 made its first Australian appearance at the Data '82 show in Sydney in August and deliveries are expected in October. The Australian price will be under \$1000.00 making it a more competitive alternative to other popular personal computers.

With the Commodore 64, Commodore can offer a range of computers starting from the popular VIC-20 at \$399.00, to advanced business systems retailing at over \$7,000.00. This range of products enables Commodore to lead the microcomputer suppliers in Australia.

The success behind the Commodore 64 lies in a new microprocessor developed by Commodore's subsidiary company, MOS Technology. The 6510 uses the same instruction set as the popular 6502, but has additional input/output lines. This significant advance in technology, provides a

personal computer with outstanding colour, graphics, music, and computing capabilities.

With a memory capacity of 64K (64 thousand bytes of storage) as standard, the Commodore-64 offers more built-in memory storage than any other popular personal computer. A high quality music synthesizer is built into the Commodore-64, which can be connected to a high quality sound system to fully appreciate this feature, found only with dedicated synthesizers.

The Z80 microprocessor is available as a plug-in optional extra to allow the Commodore

64 to run CP/M, giving users access to one of the largest available collections of software.

The most visible feature is the high resolution graphics and the use of sprite characters to give three-dimensional objects that can move over, under, and behind one another.

Commodore has already developed a variety of programs for the 64 and is working with many suppliers for much, much more. Popular programs include financial planning, data management, word processing, education and sophisticated games and music synthesis.

Commodore 64



**"THE COMMODORE 64
COULD BE THE
MICRO-COMPUTER
INDUSTRY'S OUTSTANDING
NEW PRODUCT INTRODUCTION
SINCE THE BIRTH OF THIS
INDUSTRY."**

SHEARSON AMERICAN EXPRESS
EQUITY RESEARCH BULLETIN

continued on page 2

VIC-20 OUTSELLS OTHER MICROS

With the release of a large number of cartridge games and the availability of a range of peripherals, the VIC-20 offers expansion capabilities at a price not available with other personal computers.

Sales have exceeded 1500 units per month, with over 100 retail outlets supplying and supporting the VIC product range.

"Home computers are not simply a fad, they are here to stay and will become part of the Australian Home in the 1980's much as television set have", said Commodore's Managing Director, Nigel Shepherd.

"When Commodore pioneered the microcomputer industry in the mid-1970's with the introduction of the PET, it marked the dawn of an entire new era that has become the 'era of the home computer'. Today a VIC-20 home computer can be purchased for less than a colour television receiver and users can learn computing concepts, develop their own programs, and reach well beyond previous limits for education and recreation."

"Video games helped pave the way for home computers", Shepherd said, "because they were low cost and simple to connect to the television receiver. Now the VIC-20 is available at a similar price and offers many of the games, the home computer is literally 'taking over' from these less sophisticated amusement toys."

Since the introduction of the VIC-20 computer, sales have exceeded the anticipated demand. The popularity has been attributed to the low price tag of \$399.00 and the many features of colour and sound.

HARD DISK DRIVES INCREASE STORAGE CAPACITY



Providing increased storage capacity up to 9 megabytes, Commodore's recently announced hard disk drives extend the range of Commodore peripherals, to offer one of the largest and most flexible system configurations available from any micro-computer supplier.

The model CBM 9090 offers 9.57 megabytes of unformatted storage capacity (6.38 megabytes formatted) and the CBM 9060 offers 7.46 megabytes unformatted (4.97 megabytes formatted).

Similar to all other Commodore disk peripherals, the hard disk units have an intelligent disk operating system built into the drive, allowing the units to be plugged into the IEEE 488 bus which is standard on all CBM computers.

This features means that no memory overheads are required from the host computer to support the disk unit and allows flexibility in configuring systems to meet a price and capacity criteria.

Using the latest Winchester technology, these drives are highly reliable and low cost, representing the best byte for dollar value.

The disk operating system supports relative and sequential file storage to the full disk capacity. The number of blocks available to the user on

a formatted disk, is 29,162 for the CBM 9090 and 19,442 for the CBM 9060.

The range of popular Commodore business software will support the hard disk drives, allowing increased storage capacities similar to mini-computer configurations.

Speed of data transfer is a significant advantage with the hard disk units, allowing internal transfer rates up to 5 megabytes per second, an increase of 125 times floppy disk storage.

The hard disk units complement a range of floppy disk drives that range from a low cost single drive of 170 kilobytes (CBM 2031), to dual drives of 340 kilobytes (CBM 4040), 1 megabyte (CBM 8050) and 2 megabyte (CBM 8250) capacity.

CARTRIDGE SOFTWARE ANNOUNCED

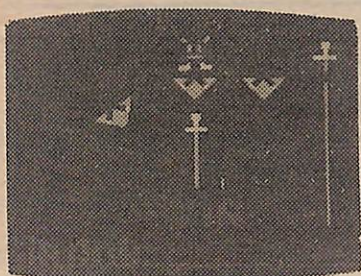
A vast range of cartridge software has been announced to support the popular VIC-20 personal computer and the recently announced Commodore-64.

A few of the many cartridges are pictured here, but what is amazing is how you'll see them. Using the latest technology in these microcomputers, you will see an amazing variety of colours never offered before and a full range of sound (zap, ping, boom - to name just a fraction).

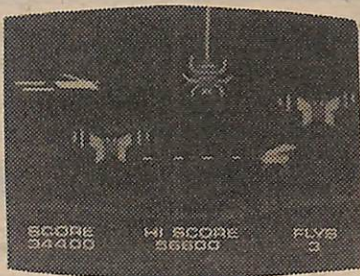
The resolution will truly rival arcade machines, allowing you all the popular games in your own living room.

You've never seen such a sound and light show on a micro-computer before. The joysticks and paddles allow you to take control of the game and become a fighter pilot, a racing car driver, a martian fly, or whatever your imagination can deal.

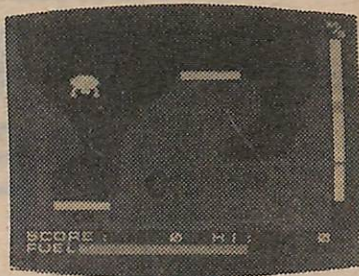
Which is not to say the fun has to stop there. You can also let your imagination take over the computer and invent your own sophisticated (or unsophisticated) games. Commodore computers are not just a video game, but a whole expandable system.



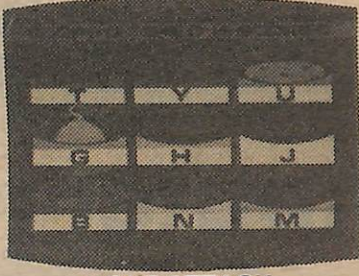
GORF



SPIDERS OF MARS



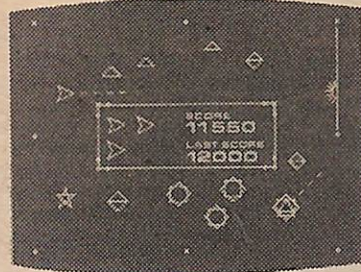
JUPITER LANDER



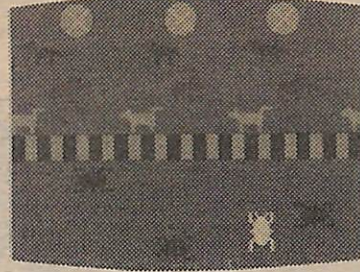
MOLE ATTACK



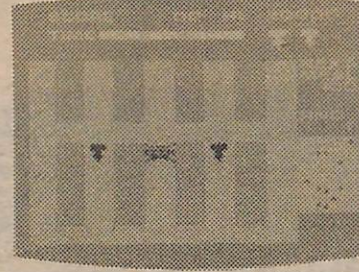
VISIBLE SOLAR SYSTEM



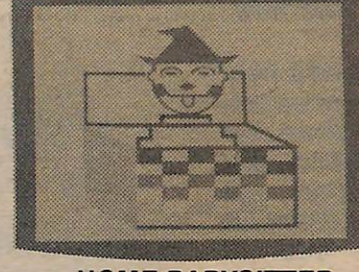
OMEGA RACE



MENAGERIE



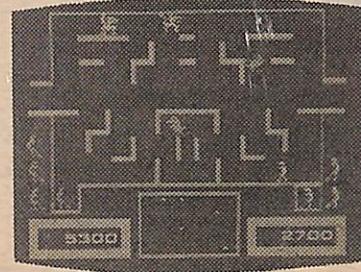
RADAR RAT RACE



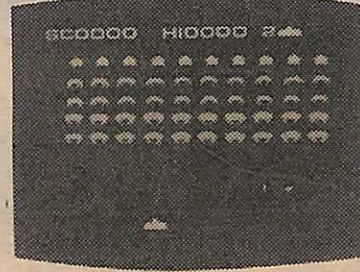
HOME BABYSITTER



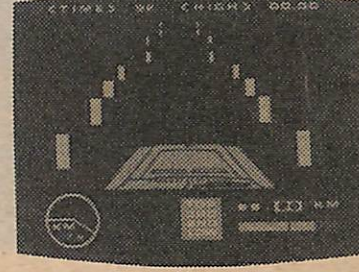
LIGHT PEN ARTIST



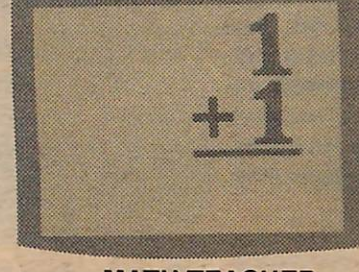
WIZARD OF WOR



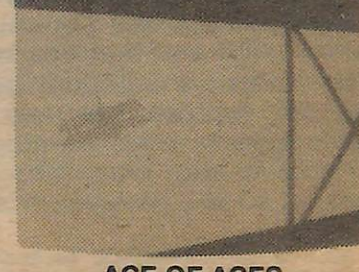
AVENGER



MIDNIGHT DRIVE



MATH TEACHER



ACE OF ACES

NEW COMPUTER ANNOUNCED CONT. FROM PAGE 1

Plus - and a big plus for educators - you can have access to programs developed for the Commodore PET. The PET family of computers are in more schools around the world than any other computer. The BASIC language of the Commodore-64 is the same as the PET, allowing all the educational programs to be used on either computer.

The Commodore 64 is simply plugged into a standard television receiver and is ready to use. As needs grow, the system can be expanded with disk drives, printers and communications capabilities.

The Commodore-64 is surprisingly easy to learn to use, even for those not familiar with computers. Clear, 'user-friendly' programs and manuals take the user through each operation, step-by-step.

Technical Details.

Microprocessor:

Uses a 6510 microcomputer, designed and produced by Commodore's MOS subsidiary.

The Z80 microprocessor is available as a plug-in optional extra to allow the Commodore 64 to run CP/M.

Memory:

64K of RAM. 39K are user-accessible for BASIC programs; 52K for machine language programs.

20K of internal ROM contain the operating system and Commodore BASIC language.

Keyboard:

Full-size typewriter style. 66 keys, upper and lower case. Four unassigned programmable function keys.

Colour and the full set of 64 PET graphics can be selected directly from keyboard.

Editing keys include: CTRL, to set character colours and execute special commands; RUN/STOP, to load programs from a cassette tape; SHIFT/SHIFT LOCK, to select either upper-lower case or upper case and PET graphics; RVS ON/OFF, to reverse text and background colours on screen; CLR/HOME, to move cursor to "home" position, or to clear screen of all characters; INST/DEL, to insert or delete characters and correct text directly on the screen; RESTORE, to reset computer after operating

RUN/STOP; CURSOR KEYS, to move the screen cursor up, down, right or left; RETURN, for entering commands and instructions.

Display:

New display chip generates 40 columns by 25 lines on screen. Allows 255 combinations of border/background colours, 16 text colours and use of all 64 PET graphic characters. It also allows the user to construct programmable characters to replace the normal set.

High-resolution graphics mode of 320 x 200 pixels for exceptional detail and clarity in games or animation. Can use 16 colours simultaneously.

8 independently movable Sprites can be created for games and animation. Each is 21 x 24 pixels, and may contain up to three colours. The Commodore 64 provides collision detection and instructs the computer to take action when Sprites hit one another. Allows object display priority, so that Sprites can pass in front of and behind each other.

Independent magnification of objects enhances ability to create graphics. Objects can be scrolled vertically and horizontally, pixel by pixel.

Sound:

6581 Sound Interface Device provides music and sound to rival even some dedicated music synthesizers.

Produces three independent voices, each with a range of nine octaves. Four waveforms are available: sawtooth, triangle, variable pulse and noise.

Includes programmable ADSR (attack, decay, sustain, release) generator. Programmable filter can be individually selected for each voice; provides low-pass, high-pass, band-pass or notch outputs. Variable resonance and master volume control.

Peripherals

The Commodore 64 will support the VIC range of peripherals including:

Datassette Recorder: A low-cost tape unit which allows the storage of programs and data on standard audio tape cassettes.

Single-Disk Unit: Uses standard 5.25" floppy diskettes to store programs and data. Each diskette holds up to 170,000 characters of information. Disk units include their own microprocessors and memory systems, and therefore don't require memory resources from the Commodore 64 main unit. The Commodore 64 will support up to five single-disk units.

Printer: The VIC 1515 printer attached directly to the Commodore 64 without additional interfaces. Prints 30 character per second, dot-matrix. Uses plain tractor-feed paper.

Interface Cartridges: Specialized cartridges allow the Commodore 64 to use various standard devices,

including printers, controllers and modems.

IEEE-488 Cartridge: Adapts the 64 to accept the full range of CBM peripherals, including disk units and printers.

PET Emulator Cartridge: Allows users to run most of the

programs designed for PET systems without modification.

Audio and Video Connections: Direct outputs from the Commodore 64 connect audio signals to high-quality audio systems, and video signals to a monitor.

Cartridge Slot:

Will accept games and other applications designed for Commodore 64 on plug-in cartridges.

Other Interfaces:

Provide access for two joysticks, four game paddles or lightpen.

FEATURES

	COMMODORE "64"	APPLE II+®	IBM®	TANDY TRS-80 III®	ATARI 800®
ADVANCED PERSONAL COMPUTER FEATURES					
Built-in User Memory	64K	48K	16K	16K	16K
Programmable	YES	YES	YES	YES	YES
Real Typewriter Keyboard	YES(66 keys)	YES(52 keys)	YES(83 keys)	YES(65 keys)	YES(61 keys)
Graphics Characters (from Keyboard)	YES	NO	NO	NO	YES
Upper & Lower Case Characters	YES	Upper Only	YES	YES	YES
Max. 5.25" Disk Capacity Per Drive	170K/1000K	143K	160K	178K	96K
AUDIO FEATURES					
Sound Generator	YES	YES	YES	NO	YES
Music Synthesizer	YES	NO	NO	NO	NO
Hi-Fi Output	YES	NO	NO	NO	NO
VIDEO FEATURES					
TV Output	YES	EXTRA	EXTRA	NO	YES
INPUT/OUTPUT FEATURES					
"Smart" Peripherals	YES	NO	NO	NO	YES
SOFTWARE FEATURES					
CP/M Option (Over 1,000 Packages)	YES	YES	YES	YES	NO
GAME MACHINE FEATURES					
Cartridge Game Slot	YES	NO	NO	NO	YES
Game Controllers	YES	YES	YES	NO	YES



COMMODORE HARDWARE AND SOFTWARE SPECIALIST

FOR BUSINESS, EDUCATION
AND PLEASURE.

THE MICROCOMPUTER HOUSE probably has the largest showroom for Commodore products in the inner city area!

We specialise in both **HARDWARE** and **SOFTWARE** (over 800 programs) plus we can do **REPAIRS** and **CONVERSIONS**, **PROGRAMMING AIDS**, **SUPPLIES**, **AMATEUR RADIO** **HARDWARE** and **SOFTWARE**, **COMPUTER FURNITURE**, plus lots, lots more.

THE MICROCOMPUTER HOUSE has three exclusive software programs - **THE FRIEND SERIES**. Friend 1 (Word Processor) is available as a chip, disk or tape. Friend 2 is a dual disk based system Mailing List and Friend 3 is a ROM chip Data Handler for the 4000 and 8000 series. Also available are **HI RESOLUTION BOARDS** for the 4000 and 8000 series. Brand new from Code Works (Cursor) are programs designed specifically for the VIC 20 computer - these are known as **VIXEL** programs.

ROM ADD-ONS: Arrow - fast tape LOAD/SAVE. PIC Chip - the graphics design chip. Toolkits - Full range of toolkit type chips - a must for the programmer, extends BASIC with up to 40 extra commands!! The range includes, Disk-O-Pro, Command-O-, etc. Another chip is the MicroMon - the toolkit for the machine language user - includes Assembler/Disassembler functions.

If you are after a computer, a system or software for either business or pleasure then why not contact John Giudice today!

NOW YOU CAN SUBSCRIBE

For \$43 you will receive a 6-issue subscription which includes a C-30 cassette with 5 programs plus the cover program. Each subscription means a total of 36 programs at around \$1.19 each!!



THE BEST FRIEND
FOR YOUR
COMMODORE PET

The Microcomputer
House Pty. Ltd.

116 - 120 Abercrombie Street
Chippendale, N.S.W. 2008
Phone: 698 7866 or 698 7076
In Brisbane: CW Electronics
416 Logan Rd, Stones Corner
Ph. 397 0808 or 397 0888

COMMODORE ACCOUNTING SOFTWARE

To support the popular CBM8000 series business computer, Commodore have developed a sophisticated suite of accounting packages.

The main feature is flexibility in configuration, as the ledger capacities can be configured to suit a particular disk drive from the range of Commodore disk peripherals. This allows a system to be installed to suit

your budget and capacity and grow as your requirements change.

A range of printers allow letter quality presentation or high speed dot matrix printing. The accounting packages can

be configured to suit your and creditor information and creditors posting with inventory updating.

The capacities quoted below reflect those for the CBM 8050 dual disk drive with 1 million bytes of storage

and creditor information and creditors posting with inventory updating.

The capacities quoted below reflect those for the CBM 8050 dual disk drive with 1 million bytes of storage

capacity. Your Commodore Dealer will be able to advise on the capacity and configuration for your requirements.

The Commodore Accounting software has been developed in Australia to reflect the needs

of local business and is fully supported by Commodore and your Commodore Dealer.

COMMODORE DEBTORS LEDGER

SUMMARY OF DEBTORS LEDGER OPTIONS

1. **Reference entry.** Initialises data diskettes and records the user name and address.
2. **New debtor.** Allows the information for a new debtor to be entered.
3. **Modify/delete debtor.** Allows the information held on a particular debtor to be altered, or the removal of a debtor with no outstanding balance.
4. **Journal entry.** Allows a debtor's balance to be adjusted.
5. **Invoice entry.** Allows information on each invoice to be posted to a debtor's account, and update sales dissection and area analysis.
6. **Credit note entry.** Allows information on each credit note to be posted to a debtor's account, and update sales dissection and area analysis.
7. **Cash receipt entry.** Allows the entry of payments and settlement discount to a debtor's account.
8. **Sales dissection maintenance.** Allows sales dissection codes to be added or amended.
9. **Sales dissection enquiry.** Allows screen enquiries for all sales dissection codes, showing current month totals and a month by month analysis.
10. **Account enquiry.** Allows enquiries to be displayed on the screen or printed, for any debtor's account, showing balances outstanding and all current transactions.
11. **Transaction listing.** Prints a report of all transactions in the current accounting period. This report can be produced in chronological order or account number order, or for all transactions or a selected type e.g. all invoices.
12. **Trial balance.** Prints a report of all debtors accounts and their balances, with information on the date of the last payment and amount received in the current accounting period. This report can be produced in account number order, or in alphabetical order of debtors.
13. **Ageing.** Used at the end of the accounting period

to 'age' all debtors balances and clear transactions.

16. **Statement print.** Prints a statement for each debtor showing all current transactions and balances outstanding. Statements can be produced in alphabetical order or in account number order, and accounts with zero balance can be suppressed from printing.
17. **Sales dissection print.** Prints a report of all dissection codes giving the month-to-date and year-to-date totals.
18. **Collection letter entry.** Allows the entry of two standard letter formats which can be printed for all or a selected group of debtors accounts e.g. 90 days overdue. This option also allows a message to be entered which will print on each debtor's statement e.g. announcement of new product, office holiday.
19. **Collection letter print.** Prints the standard letter formats as entered in option 18.
20. **Debtors listing.** Prints a report of all debtors accounts, detailing the non-financial information. This report can be produced in account number order, or in alphabetical order of debtors.
21. **Mailing labels.** Prints labels for each account for attachment to parcels or envelopes.
22. **Column descriptors amend.** Allows the headings that are printed on the statements to be amended. This allows the user to customise the statement presentation.
23. **Customer sales analysis.** Prints a report of all debtors showing total purchases month-to-date, year-to-date and last year. This report can be produced in account number order, or in alphabetical order of debtors.
24. **Salesman area maintenance.** Allows the addition or modification of the salesman/area categories, and establishes commission percentages if required.
25. **Salesman/area analysis.** Prints a report on all salesman/area categories detailing sales figures, budgets and commission earned for the current month and year-to-date.
26. **Commission statement print.** Prints a report for each salesman/area, showing all transactions for the

current period and the commission earned.

29. **End.** Exit from the debtors ledger.

SYSTEM CAPACITIES

700 debtors accounts per diskette. This allows the name, address and account details to be stored for 700 debtors per diskette. Multiple diskettes can be used, however each diskette will be treated as a separate debtors ledger, each holding its own analysis totals.

2300 transactions. Each time a posting is made to a debtor's account e.g. details of an invoice, credit note, cash receipt or journal, the details of that posting (date, reference and amount) are stored in the transaction file. This file is used for transaction reports, and to produce remittance advices for each creditor.

10 system purchase dissections. These dissections provide the total invoices, credit notes, discounts and cash payments that have been posted, on a month-to-date and year-to-date basis.

89 user purchase dissections. While posting the details of an invoice or credit note to a debtor's account, it is possible to dissect the total amount posted, into these 89 dissection areas. These dissections could be used for purchase and expense analysis.

COMMODORE CREDITORS LEDGER

SYSTEM CAPACITIES

720 creditor accounts per diskette. This allows the name, address and account details to be stored for 720 creditors per diskette. Multiple diskettes can be used, however each diskette will be treated as a separate creditors ledger, each holding its own analysis totals.

2300 transactions. Each time a posting is made to a creditor's account e.g. details of an invoice, credit note, cash payment or journal, the details of that posting (date, reference and amount) are stored in the transaction file. This file is used for transaction reports, and to produce remittance advices for each creditor.

10 system purchase dissections. These dissections provide the total invoices, credit notes, discounts and cash payments that have been posted, on a month-to-date and year-to-date basis.

89 user purchase dissections. While posting the details of an invoice or credit note to a creditor's account, it is possible to dissect the total amount posted, into these 89 dissection areas. These dissections could be used for purchase and expense analysis.

SUMMARY OF CREDITOR OPTIONS

1. **Reference entry.** Initialises data diskettes and records the user name and address.
2. **New creditor.** Allows the information for a new creditor to be entered.
3. **Modify/delete creditor.** Allows the information held on a particular creditor to be altered, or the removal of a creditor with no outstanding balance.
4. **Journal entry.** Allows a creditor's balance to be adjusted.
5. **Invoice entry.** Allows information on each invoice to be posted to a creditor's account and update the purchase dissections.
6. **Credit note entry.** Allows information on each credit note to be posted to a creditor's account, and update the purchase dissections.
7. **Cash payments entry.** Allows the entry of payments and settlement discount to a creditor's account.
8. **Auto cash payments.** The system will automatically generate a cash payment transaction for all creditors accounts satisfying the selected criteria e.g. 90 days outstanding etc.
9. **Purchase analysis entry.** Allows purchase dissections to be added.
10. **Purchase analysis update.** Allows purchase dissection details to be amended.
11. **Account enquiry.** Allows enquiries to be displayed on the screen for any creditor's account, showing balances outstanding and all current transactions.

12. **Transaction print - invoice.** Prints a report of all invoices entered in the current period.
13. **Transaction print - credit note.** Prints a report of all credit notes entered in the current period.
14. **Transaction print - payments.** Prints a report of all payments entered in the current period.
15. **Transaction print - journals.** Prints a report of all journals entered in the current period.
16. **Trial balance.** Prints a report of all creditors accounts and their balances. This report can be printed in account number order, or in alphabetical order of creditors.
17. **Remittance advice print.** Prints a report of selected creditors, a Remittance Advice detailing all transactions in the current period and balance outstanding.
18. **Cheque print.** Cheques will be printed to match the cash payment entries in option 7 or 8.
19. **Purchase analysis print.** Prints a report of all purchase dissections, listing month and year-to-date totals.
20. **Creditor purchase analysis.** Prints a report of all creditors, listing purchases and discounts received for the month and year-to-date.
21. **Ageing.** Used at the end of the accounting period to 'age' all creditor accounts and clear transactions.
22. **Creditor listing.** Provides a listing of all creditors accounts, detailing the non-financial information. This report can be produced in account number order, or in alphabetical order of creditors.
23. **Mailing labels.** Produce labels for selected accounts, for attachment to parcels or envelopes.
24. **End.** To exit from the creditors ledger.

COMMODORE GENERAL LEDGER

SUMMARY OF OPTIONS

1. **Reference entry.** Initialises data diskettes and records the user name.
2. **Chart of accounts maintenance.** Allows the entry of additional general ledger accounts, and the modification or deletion of existing accounts.
3. **Budget maintenance.** Allows budget figures to be entered to the revenue and expense accounts for all 12 periods of the financial year.
4. **Period maintenance.** Allows the user to allocate the beginning and ending of the financial year, and to nominate the period in which processing will begin.
5. **Save/create standard chart.** Allows the user to select the standard chart of accounts as supplied and record those accounts on the data diskette.
6. **Private ledger enquiry.** Displays on the screen the detail and current transactions for selected accounts.
7. **Journal postings.** Allows the entry of debit

and credit posting to the general ledger accounts.

8. **Transfer totals.** Transfers the monthly totals from the debtors and creditors data diskettes to the relevant general ledger accounts.
9. **Transaction print.** Allows a report to be printed of all current transactions by date order, period order, batch order, or source type.
10. **Budget print.** Prints a report of the budgeted figures for selected accounts for all periods.
11. **Private ledger print.** Prints the account detail with all current transactions for selected accounts.
12. **Chart of accounts print.** Prints a report for all accounts showing account characteristics.
13. **Trial balance.** Prints a report of selected accounts showing the month-to-date and year-to-date balances as a debit or credit.
14. **Balance sheet.** Prints a balance sheet of all asset and liability accounts.
15. **Profit and loss.** Prints a profit and loss

report for the current month and year-to-date.

16. **End of period ageing.** Used at the end of each period to clear transactions.

29. **End.** To exit from the general ledger.

SYSTEMS CAPACITIES

Total number of accounts is 999.
Accounts 001-299 reserved for balance sheet items.
Accounts 300-999 used for profit and loss items.

Total number of current transactions is 2280.
100 departments available for analysis reporting.

Standard chart of accounts supplied, but can be established by the user.

BRISBANE CENTRE FOR CW COMMUNICATIONS

Starting in a small way VK4 AHD has been giving Australian computerists the world. VK4 AHD, better known as Brian Beamish (general manager of CW Electronics and The VIC Centre) is an enthusiastic 'Ham' radio operator and his company a very successful Commodore dealer.

From its commencement CW Electronics have dealt in a wide range of communication and computer equipment. Working primarily with the Commodore range has lead the field within Australia in the development of computer/radio communications. RTTY, ASCII and Morse Systems

Over two years ago CW Electronics started its import side of the business with the Marcotronics range of RTTY, ASCII and Morse (CW) interfaces that turned the Commodore into a sophisticated communications computer. Not only were these used by amateur radio operators but also by exploration companies in Northern Queensland. CW found that interest grew, primarily through word of mouth (or morse key) on the air ways, and markets opened up in Papua New Guinea, New Zealand and the Pacific area.

The Marcotronics units give a package containing a word orientated Editor with eight keyboard programmable messages (use for testing, station identification and other purposes), an instant replay function for message conformation and message library enabling the operator to save

incoming messages onto disk or cassette. There are other features that endear these units to the operators such as automatic time and ID transmission, 10 minute ID auto call and built-in Phase Locked Loop Demodulator.

VIC talks to the World

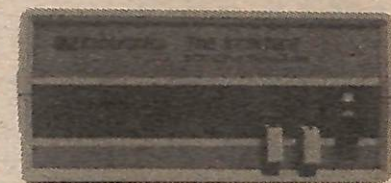
With the release of the VIC-20 CW Electronics has now obtained the distribution rights to a number of VIC orientated systems and software.

The VIC-20 HAMSOFT plug in program board allows reception of Morse Code (CW), Radio Teletype (RTTY) and American Standard Code for Information Interchange (ASCII).

HAMSOFT was developed to use with *The Interface* (also distributed through CW Electronics). The Interface is a complete transceiver-to-computer modem capable of decoding and transmitting CW and all necessary AFSK tones for RTTY and ASCII. The Hamsoft/The Interface/VIC-20 combination offers one of the most versatile communications computer packages on the market today (and very cost effective).

Power off and memory maintained

This Brisbane based company are not solely communications orientated. They also are the Australian representative for Instant ROM and Instant RAM battery supported chips that plug directly into Commodore and other compatible micros that enable the computer to maintain up to 8k of memory after the power has been turned off. These chips come in standard 24 pin industrial package and are ideal for enthusiast,



The Interface - transceiver-to-computer modem

programmers, and industrial use. From the same manufacturer comes a 24hr clock that maintains the time after power down.

VIC-20 40/80 DISPLAY

In September CW is expecting to release a 40/80 Column display cartridge for the VIC-20.

The cartridge will feature:-

- ★ 40/80 column display (not colour)
- ★ VIC CBM graphics
- ★ Load all VIC/CBM Programs
- ★ All cursor control U/L case
- ★ Switchable from BASIC without losing program
- ★ No alterations to VIC required
- ★ No external power supply
- ★ Works together with 32K Basic VIC Computer.

Expected retail price will be approximately \$379.

CW Electronics are offering a pre-release special price on this unit.

For further information contact: Brian or Bill
CW Electronics/The VIC Centre
416 Logan Rd.
Stones Corner
Brisbane 4120
(07) 397 0808

COMMODORE MAGAZINE 8 TIMES A YEAR

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MBG82



COMMODORE STATIONERY AVAILABLE

With the advent of small/medium sized business computers and packaged software, the need for off-the-shelf business forms to support various business systems became apparent.

Traditionally, the continuous business forms suppliers operated through direct sales representation - calling on end users and assisting with forms and systems design to meet current needs.

The method of purchasing business forms is not always appropriate for small/medium computer installations, particularly the first time user, for many reasons. A vital consideration is the ability of many hardware and software suppliers being able to deliver ex-stock to the first time user.

As the computer industry moves increasingly towards off-the-shelf supply of hard-

ware and packaged software, it stands to reason that there should be an instant supply of business forms to complement a system. There are also considerable savings in forms costs to end users who do not wish to purchase totally custom printed computer forms and instead opt for standard designed instant business forms.

One major business forms manufacturer has recently released a product range of instant carbonless business forms which are packages for retail throughout the data dealer who supplies the software package. This new off-the-shelf product is marketed under the Rediform label, a brand name which describes the product aptly.

Components of this new offering include a wide range of Commodore approved stock computer forms designs, with space provided for computer entry of personalised details. All the Commodore

business software will run on these forms and in addition, Rediform stock forms can be overprinted with company logos, and specific wording relating to terms of sale, etc.

Also offered is a range of small, convenient, carry packs of carbonless stock computer printout forms, available in a range of commonly used sizes, either singles or multi-part. These small carrypacks are designed to be convenient to carry from point of purchase and allow direct feeding from carton to printer during use, as well as providing suitable permanent storage of printouts.

To meet the labelling and addressing requirements of the small computer user, economic quantities of continuous Rediform self-adhesive labels in a range of sizes and numbers across the sheet provide a quick convenient method of providing effective identification.

The after-print requirements

are an additional consideration for the small computer user if maximum benefit is to be gained from a data processing system. Rediform offers a total range of forms handling and storage products to accommodate these requirements. Rediform print-out and data files are available in a distinctive range of colours which together with a portable storage trolley, provide an efficient method of storing printout which needs to be referred to often.

A table top mini detacher and separate mini decollator complete the Rediform forms handling range. These units are portable and easy to operate, and will detach and separate multi part continuous forms quickly and efficiently.

Whatever the end user's requirements, Rediform offers some interesting alternatives to traditional computer forms supply, by being available on demand from your Commodore dealer.

WE CAN TURN COMMODORE DISKS & CASSETTES INTO

- ★ leaflets/brochures
- ★ catalogues/price lists
- ★ Manuals
- ★ books/reports
- ★ etc. etc.

Mervyn Beamish Graphics Pty Ltd can convert your Commodore text files from disk or cassette into quality phototype text. We can also produce camera ready art, ready for the printer and probably get you a better price on your printing than you will get elsewhere.

COMMODORE COURIER was produced by MBG from WORDCRAFT disks supplied by COMMODORE



MERVYN BEAMISH GRAPHICS PTY LTD
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NSW 2065
(02) 439 1827

choice of working in plain English or complex mathematical expressions.

Results can be printed in any form you desire, using the word processor, or stored on diskette for future reference.

The Communications. SILICON OFFICE can be linked up to other SILICON OFFICE systems to transfer information over long distances. By using modems or acoustic couplers, a normal telephone line can be used.

Once this information is sent, it can be stored, printed or processed further.

CONFIGURATION SILICON OFFICE requires a CBM 8096 computer with a choice of disk drives. The printer can be selected to suit your requirements.

Further information and a demonstration of the powerful SILICON OFFICE program can be provided by your Commodore Dealer.



Rediform

Instant business forms and ancillary products for the small computer user.

Rediform is a totally new concept in the supply of forms requirements for the small computer user. No longer do new users need to wait for delivery of important computer forms. The Data Dealer who has supplied the software package can also supply the relevant pre-set forms, off the shelf, along with other start-up requirements. Rediform offers a range of...

Pre-set instant business forms:

Rediform pre-set carbonless forms designs are specially designed for common business applications such as invoicing, accounts payable, accounts receivable etc., allowing every business to take advantage of expert and accurate forms designs approved by computer suppliers.

Stock computer print-out paper:

Rediform carbonless print-out paper is available in convenient carry packs in a range of sizes - either singles or multi-part. The carry pack doubles as a storage module for permanent filing of print-out.

In addition, Rediform offers a range of Self-Adhesive Continuous Labels, Forms Files, and Forms Handling Equipment.



Rediform products and information are available from your Data Dealer.

SILICON OFFICE

SILICON OFFICE is a completely new concept in microcomputer software.

All the major functions required to run a small business or office can be performed by SILICON OFFICE. This can mean anything from accounting and stock control, to word processing, statistical analysis, mailing lists and information filing, all at once if necessary. SILICON OFFICE is made up of a number of integrated elements.

A flexible information management system allows you to create and maintain a very large number of files.

A sophisticated word processor lets you generate letters, documents or reports.

A fully comprehensive calculator means you have all the functions of a desk top calculator in front of you.

A communications option lets you transfer information from one SILICON OFFICE terminal to another.

The key to all these elements is the programmability of SILICON OFFICE. This allows you or your Commodore Dealer to extend and tailor SILICON OFFICE to your specific needs. The above features can be combined into tasks that are performed to suit your specific requirements.

Even if you bought individual programs that performed some of the tasks of SILICON OFFICE, you would still be missing the most fundamental thing of all; the interactive link SILICON OFFICE has between all its individual functions.

SILICON OFFICE can be used cost effectively throughout a complete working day.

You can switch from word processing to filing to accounting, without having to have expensive dedicated machines lying idle and staff wasting valuable time.

The Filing At the heart of the SILICON OFFICE is a sophisticated information management system. This allows the user to 'file' away large amounts of information on floppy diskettes.

What is stored is up to the user, stock lists, patient lists, sales ledgers etc. The user can configure SILICON OFFICE for many different types of applications.

To design a SILICON OFFICE configuration is like setting up a card index. You can choose your own screen design and when information is entered, SILICON OFFICE will store the information automatically. It is like a giant filing cabinet.

Stored information can be called up at any instant. You don't need special computer codes, you can call up your individual records by name. You can also search all records for particular information.

For example a Real Estate application may require a list of houses with 4 bedrooms, a garage, between \$80,000 and \$100,000 dollars and close to public transport. SILICON OFFICE will automatically search all records and produce a report of all the property meeting the selection criteria.

An important feature of the SILICON OFFICE database is the ability to search through six

files at one time to gain the information you require. For example you may wish to locate the stock records for all out-of-stock lines, search the order file for all orders relating to those items, and then look up in the Customer File the address of all affected clients and produce a letter advising the stock situation.

The Typing SILICON OFFICE allows full word processing functions, such as creation, storage, editing, and printing of text such as invoices, letters and documents.

The text is displayed on the screen and printed as required. Editing is simple with automatic re-formatting.

Document size is limited by diskette storage, for example one CBM 8050 diskette will hold more than 150 A4 pages.

Text from 20 to 125 characters in width can be handled, with tab stops and ruling screens to create multi-column formatting.

Standard letters and similar can be stored on diskette and recalled as desired. A major feature is the ability to merge calculated data, or selected information into the body of the text and have the formatted text print automatically.

A choice of printer allows selection to suit budget and print quality, from low cost electronic typewriters to high speed dot matrix printers.

The Accounting. You can perform all the mathematical calculations you are likely to need with SILICON OFFICE.

In addition to the basic functions, you can use trig functions, maximum, minimum, exponent, absolute, integer etc.

Calculations can be performed using information from your files. For example, stock can be revalued by 11% on all items over \$100.00.

When you calculate, you have the



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DEBITORS AND INVENTORY CONTROL

- 928 Customers Records & 6,181 current Transaction Records for each data disk.
- Up to 26 data disks
- 348 Product classifications by 116 sales classifications per disk.
- Standard letters held, eg. payment overdue, price list, instruction sheets.
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- 26 user definable transaction types.

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● The MATHEMATICAL equivalent of word processing. Multiple on-screen Calculations. Ideal for all types of Mathematical work.

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IEEE-488 HUGE SUCCESS

When Commodore released their first PET computer in 1975, much criticism was directed at the bus architecture employed by the design engineers.

There was no S100 bus, no serial interfaces, only an eight bit user port and the IEEE-488 bus.

Up to this time the IEEE bus had been confined to instrumentation systems and

used as the HP-IB bus by Hewlett-Packard to connect peripherals to the host computer.

Since the discovery of this versatile bus, Commodore computers have found themselves hooked up to many interesting interfacing situations. Many scientific and industrial instruments support this bus and have the Commodore computer

connected as an inexpensive controller.

The Australian CSIRO have used the Commodore micro-computer to talk to a range of measuring devices to collect, log and compute data.

Commodore micro-computers have also successfully been connected to Hewlett-Packard peripherals, including their range of precision plotters.

The advantage of the IEEE-488 bus, is that peripherals just plug-in using an extension cable between the peripheral and the host computer, or between peripherals. Up to 12 different peripherals can be 'daisy-chained' together on the IEEE bus, as each has an unique device address and can be recognised by the software in the host computer. With Commodore's

intelligent peripheral concept, the IEEE-488 bus means that many different peripherals can be plugged together without having to use valuable memory space in the host computer to support the peripherals. Standard commands, available in BASIC, are placed on the IEEE bus with the address of the required peripheral and the peripheral will accept the

Hewlett-Packard 9872A Programmable Multicolour Plotter is plug compatible with the Commodore IEEE-488 bus.

commands and respond accordingly. Flexibility and plug compatibility have been the

factors for the huge success of the IEEE-488 bus, used on Commodore micro-computers.



CLEAN UP YOUR COMMODORE SYSTEM

A new product recently announced, is the PETKIT cleaning system for the Commodore range of computers.

The kit is supplied in a compact, durable, vacuum-formed book specially designed to contain the items required for basic maintenance of a Commodore microcomputer system.

The products included in the kit include;

SAFECELENE

- a tape-drive cleaning fluid with a safe solvent to clean all delicate surfaces such as tape heads.

FOAMCELENE

- an anti-static foam cleanser which lifts grease, dust and dirt from keyboards, plastic cases and covers and all surfaces including fabrics.

SAFECLOTHS

- pads that are soft, lint-free, absorbent and excellent for cleaning all delicate external surfaces.

SAFEWIPES

- anti-static screen wipes specially designed to clean VDU screens, reducing



the risk of errors and eye strain caused by imperfect visual display.

SAFECELENE

- spun-bonded cleaning cloths that may be required for a stronger, more uniform wiping material.

FLOPPICLENE

- flexible diskette and disk head cleaners. These are recommended for cleaning all Commodore floppy disk units.

A special jacket takes a cleaning pad which is inserted into the drive, eliminating the risk of head recontamination and abrasion.

To ensure maximum reliability of your Commodore system, and to ensure your investment is always clean and presentable, ask your Commodore Dealer for more information on the PETKIT products.

COMMODORE USER GROUPS

Clubs have been established to allow Commodore enthusiasts to get together and discuss all aspects of the Commodore world.

Each club is independently run and has the full support of Commodore. Regular club meetings provide news, ideas, training, applications and programs relating to the Commodore product range. The user group is an information exchange between Commodore and the users.

Space is allocated in the Commodore Magazine for each club to contribute information, announcements, programs, etc., and members are encouraged to participate in the magazine.

HOW DOES THE CLUB COMMUNICATE?

Monthly meetings and regular special meetings allow Commodore Users to meet and exchange information. The meetings provide training, experience, problem solving and more.

WHERE CAN I OBTAIN FURTHER INFORMATION?

WESTERN AUSTRALIAN COMMODORE COMPUTER USERS ASSOCIATION
P.O. BOX 38,
INGLEWOOD, W.A. 6502.
THE COMMODORE COMPUTER USERS ASSOCIATION
G.P.O. BOX 4721,
SYDNEY, N.S.W. 2001.
SOUTH AUSTRALIAN COMMODORE USERS GROUP
C/- PRESIDENT,
9 NEVILLE AVENUE,
CLARENCE GARDENS, S.A. 5039.
BRISBANE USERS GROUP
P.O. BOX 127,
STONES CORNER, QLD. 4120.
ACT PET USER GROUP
C/- PRESIDENT,
13 OLIVER STREET,
LYNEHAM, A.C.T. 2602.
C/- Stephen Farrell
44 McCubbin Street
BURWOOD, VICT. 3125.

NEW COMPUTER CENTER OPENS IN HOBART

Established Hobart consumer electronics retailer, Quantum, the support placed on the base and Quantum is keenly has expanded into the field of computers by supporting the range of Commodore computers. Software and product support is provided from new showrooms at the corner of Liverpool and Harrington Streets.

A computer specialist, Mr Tony Smithies has been appointed to head the computer firm.

Quantum's managing director, Mr Rob MacFie, says his interest dates back to 1975 when he saw a prototype Apple computer at a trade show in Chicago.

Mr MacFie said, "Since then there have been many changes in the microcomputer market, and the latest Commodore product, the VIC-20 will revolutionise the home-computer market."

Quantum will also support the CBM range of products, and Mr MacFie went on to say, "More and more Tasmanian businessmen are coming to realise that the business computer, rather than being an object of mystique, is simply a readily understood aid to building efficiency and productivity, and lifting product."

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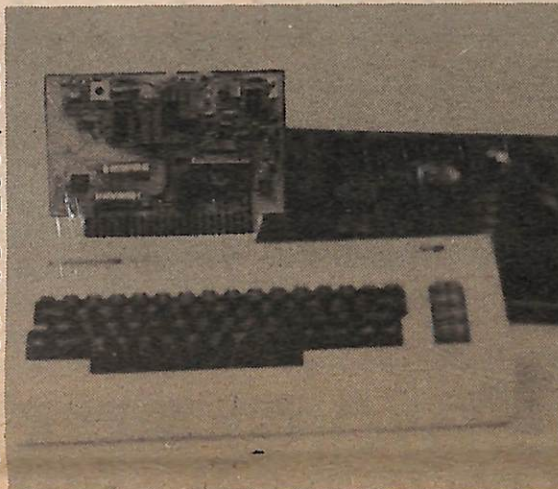


MAYDAY!

How's this for a nice picture?

The blurred object in the foreground is a Commodore VIC-20, the blurred object in the background is a standard 'ham' radio transmitter/receiver. The crystal clear object in the middle is an interface between the two which is being distributed within Australia by CW Electronics, 416 Logan Rd, Stones Corner, Brisbane 4120 (Tel: (02) 397 0808).

The idea is that it allows you to use VIC's keyboard to send messages - automatically translating text to morse code or RTTY as desired. "Vee kaan now efen send prograams between ham radio ensusiasts!"



COMPUTER IS HIS 'VOICE'

Reprinted with kind permission of St. George and Sutherland Shire Leader.

Most people are overawed by computers, but for one brain-injured ten-year-old his computer is his link with family and friends.

Kevin Giardini, of Caringbah can share his joys and sorrows through a keyboard. When Kevin wants to "talk" to his family he types out the words on a television screen.

Kevin, who nearly drowned eight years ago in a neighbor's swimming pool is luckier than most brain-injured children because only his speech and co-ordination are handicapped.

He is of above-average intelligence and has a reading ability two years better than other children of his age.

The computer has other uses too - it enables Kevin to play games such as Space Invaders.

Two hours a day Kevin attends Our Lady of Fatima Primary School, in Caringbah. He is able to walk to school now, much to the delight and surprise of his family and doctors.

Kevin's movements are slow and unsteady, but he is a hard worker.

A much-loved child both in and outside his home, Kevin is often spoilt at school by the other children.

His good-looking, bright face portrays his love of life. Kevin made the interview an easy one and made me feel



welcome without saying a word, although he spoke in his own special way to his mother.

Mrs Gemma Giardini believes the computer has made a big difference in Kevin's life.

"He can now work at his own pace and whenever he feels like it," she said.

"I used to sit with him while he was doing his homework, but now he calls me when he is finished."

She wants to buy another computer for Kevin to use at school.

There is no hostility or jealousy between Kevin and his brother, Robert 13.

Kevin can hardly wait for Robert to come home from

school so they can play together.

As well as concentrating on expanding his mind and knowledge, Kevin still has to do extensive exercises with the aid of his mother and 12 helpers.

The program is organised and assisted by the Friends of Brain Injured Children.

When Kevin started on the program five years ago, he was almost helpless.

He could only utter three words and could not walk unaided.

Friends help families of brain-injured children buy equipment for the exercise program and help train volunteers.

Kevin's exercises start before 7 am and include creeping, crawling and breathing movements.

Mrs Giardini said: "When we first started exercising Kevin, it took three people to help him crawl - one to move his arms, one to move his legs and one to move his hips. "He was virtually helpless, but he is a very bright child who wants to help himself."

Foot Note:-

Kevin is using the Commodore VIC-20 and cassette player in his work. Compute CBM Systems of Caringbah loaned Mrs Giardini the computer to ascertain if Kevin would be able to use his limited facilities to type on the keyboard. The rest of the story speaks for itself.

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DON'T FORGET THAT OTHER BUSINESS SOFTWARE IS AVAILABLE TOO.

- COMMODORE 4032 CPU, 12" Green phosphor screen.
- COMMODORE 4040 DUAL DRIVE 5 1/4" - 1/2 Megabyte disk.
- COMMODORE 4022P Dot Matrix 80 Col. Bi-directional printer.
- ALL CONNECTING LEADS, and box 2500 sheets 8 1/2" paper.
- VISICALC SOFTWARE PACKAGE

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COMMODORE AUSTRALIA

- Rapid growth in a changing market

As the microcomputer industry settles out of a boomtown atmosphere into a solid, publicly-accepted growth industry, many new companies are consolidating - while some of the established computer giants lick their wounds.

In one short decade the silicon chip has single-handedly revolutionised business and society as we know it, and the revolution - as do all revolutions - has given the chihuahua a chance to steal the bulldog's bone.

Given the silicon chip, a backyard electronics wizard with a few clues could whip up and market his own microcomputer. The giants, already committed to heavy mainframe programs, did not have the same flexibility, and were slower coming to the party.

It has been a time of rags-to-riches stories, and now that the market is consolidating, as the micro-computer digs itself firmly in business and the home alike, the survivors are laughing all the way to the bank.

Prominent among those survivors is Commodore International, now one of the world's largest manufacturers of micro-computers. Commodore's local subsidiary - Commodore Australia - has also shown a remarkable growth rate.

With a staff of two in July 1980 and a small office in Artamon furnished with makeshift furniture, the company turned over about \$30,000 for the month.

Managing director, Mr Nigel Shepherd, said: "We forecast the magic \$1 million month by the end of this year, but we were nine months ahead of schedule."

"The strong trading is partly attributable to the release of the VIC-20 \$399.00 colour computer, but we have also achieved record sales for our small business systems."

"The VIC-20 appeals to the hobbyist and educational markets to the extent that more than 1000 units were sold in the first three weeks' trading."

"But small business systems such as the Commodore 8000 series of computers, have also shown a marked upsurge."

"This is largely due to the wide range of software we are able to provide with them, including a suite of locally-produced accounting packages specifically designed for the Australian market."

"Powerful word-processing and database software, such as the recently-released Silicon Office program, has enlarged our market to cover not only the small business but also many large international corporations."

"We now have more than 100 selected dealers servicing the Australian market, with the Dick Smith chain also marketing the VIC-20."

"We recently took over responsibility for the entire South-East Asia-Pacific region, as well as for Australia."

"By the end of this year we expect to be the largest supplier of micro-computers in Australia."

"Already we are looking for larger premises - we now occupy the entire building in which we originally had one small office."

"Our dealer base is expanding so rapidly that our 1982-83 sales forecast is around \$15 million."

It was to be expected that the microcomputer would make its mark in small business and the home. Offering relatively complex computer power in a form simple to use and understand, at a price that has dropped consistently until there are few budgets that could not afford a machine like the VIC-20.

At \$399, it is tailor-made for hobbyists and small businessmen.

What has caught some of the microcomputer companies by surprise is the alacrity with which big companies have jumped on the micro bandwagon.

Big companies still need big computers to process their accounts, and the likes of IBM and Honeywell write plenty of business. But big companies also have branches and secretaries, diaries and appointments, departments and mailing lists.

Mr Shepherd said: "So where the company itself might have heavy mainframe requirements, the managing director's secretary might well have a simple micro like the Commodore 8032 to help her with word-processing, diary-keeping, and the many tasks of running a large office."

"His departmental heads could well have a Silicon Office in each department to handle administration outside of the general requirements for which the company purchased their heavyweight gear. Mainframe time is not cheap, and the company might object to using it for tasks such as coordinating the bonus tours of the company's best salesmen."

"Yet a program like the Silicon Office running on the Commodore 8096 computer, with its ability to cross-index files and handle many records simultaneously, would be eminently suitable - and at the right price - for just such a job."

"For example, Unilever, who have massive mainframe computer capacity use a Silicon Office program for production ordering. The program matches the bills of material to the production schedules to ensure that material is on hand when required."

The first computers were about the size of a small ballroom, and far more expensive. While technology has helped in reducing both size and cost, no-one buys a mainframe even today without a lot of thought.

The next on the scene was the mini-computer. At a fraction of the cost of a mainframe, it still produced relatively heavyweight capability. Yet the firm that bought a mini had still to justify it in terms of price and use.

Then came the micro, at first little more than an advanced desk-top calculator. It expanded to take in tasks like word-processing and file storage, then accounting and invoicing. Gradually its capabilities have extended: more memory, more computing power, multi-user capability, the ability to communicate to other computers.

The range of micro-computer hardware available today is staggering. Commodore's products range from the first machine the company sold in Australia - the PET, or personal electronic transactor - to the Commodore 9000 range of sophisticated, high-powered micro-computers with capabilities undreamed-of 10 years ago.

The company has taken care with two aspects of its business: first, all its machines have been provided with full software backup, and secondly, all its systems, apart from the VIC-20, can be interfaced with each other. The company presents a complete

range of integrated, inter-relating hardware.

There are few things more annoying than to buy a car and find that parts and service are unavailable, or that it runs on methyl nitrate, only available at three places in the country. Such things can happen easily in the micro-computer world, where many individuals are designing their own machines.

Likewise with software, the programming discettes or cassettes that turn a lump of iron into a word-processor or accounts machine by telling the silicon chips what to do.

It is no longer the machine that sells the micro-computer. Customers, more used to the new technology, more informed on their own requirements, are asking: "Can I get the accounts package I need to run on this machine?"

"I can see the day coming, and

soon," said Mr Shepherd, "when a customer won't just walk into the showroom and wander about until he sees a machine that interests him."

"He will be more interested in the range of software packages available to suit his particular requirements."

"It's software that will direct the growth of the micro industry, now that the mushrooming has stabilised."

"That's why we offer a full range of software to back our products, from the simplest hobbyist computer right up to the complex business systems like the Silicon Office."

"We want to be able to service our customer's every requirement, and keep him within the Commodore framework, whenever he wants to go and however big he wants to get."

Whatever, it's a long way from sitting on a packing crate in a bare office.



Take a closer look!

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- ★ SERVICE STATIONS
- ★ MARINAS
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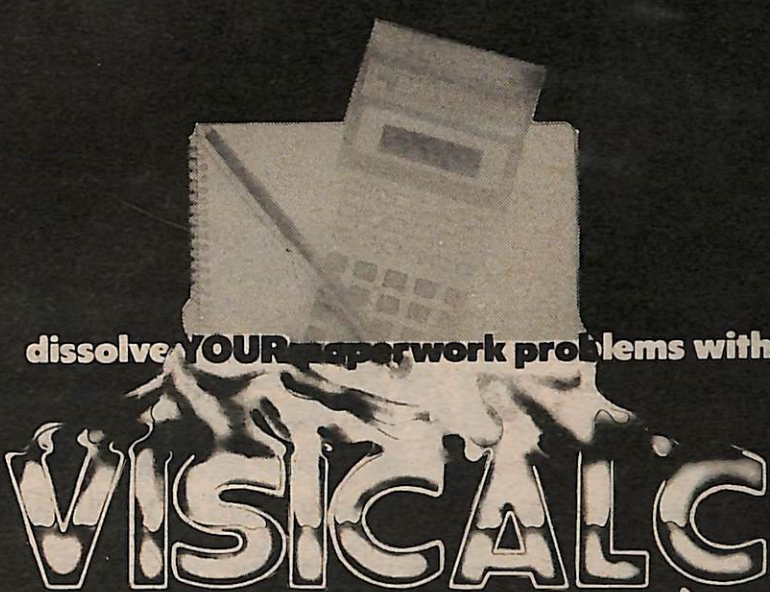
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For Cash Flow Control

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Pittwater Computer

The Calculated Investment THAT WILL REPLACE CALCULATOR & PENCIL



VISICALC COMBINES THE CONVENIENCE AND FAMILIARITY OF A POCKET CALCULATOR WITH THE POWERFUL MEMORY AND ELECTRONIC SCREEN CAPABILITIES OF THE PERSONAL COMPUTER. JUST IMAGINE CALCULATING SALES PROJECTIONS, INCOME TAXES, FINANCIAL RATIOS, YOUR PERSONAL BUDGET, ENGINEERING CHARGES, COST ESTIMATES - EVEN BALANCING YOUR CHEQUE BOOK, WITH VISICALC, INSTEAD OF A CALCULATOR, PENCIL AND PAPER.

Visicalc remembers the formulas and calculations you use as you work through a problem. If you change a number you had previously written on the electronic sheet, all other related numbers on the sheet change before your eyes, as Visicalc automatically recalculates all of the relevant formulas. Recalculation makes Visicalc a powerful planning and forecasting tool. Not only can you effortlessly correct mistakes and omissions, you also examine various alternatives. Visicalc's versatility complements the Commodore range of Microcomputers. After Visicalc is loaded into RAM, the user has available 12k RAM on the Commodore 4032 and 8032 whilst nearly 70k of user RAM is available on the Commodore 8096 series computer. This large user memory capacity provides a very powerful base for Visicalc's ability to perform the very simple to extremely complex calculations.

Visicalc is one of those software packages that needs to be demonstrated to be appreciated. Call in or phone for an obligation free demonstration.

Compute. CBM SYSTEMS

5 PRESIDENT AVE., CARINGBAH ☎ 525 5022

TECHNICAL SPECIFICATIONS

COMPUTER SPECIFICATIONS

MODEL	VIC-20	64	4016	4032	8032	8096	SuperPET
Language	BASIC	BASIC	BASIC	BASIC	BASIC	BASIC	BASIC
Other Languages	NO	YES	NO	NO	YES	YES	YES
Colour	YES	YES	NO	NO	NO	NO	NO
Graphics	YES	YES	YES	YES	YES	YES	YES
Sprite Graphics	NO	YES	NO	NO	NO	NO	NO
High Resolution	YES	YES	Option	Option	Option	Option	Option
Upper/Lower Case Char.	YES	YES	YES	YES	YES	YES	YES
Columns	22	40	40	40	80	80	80
Lines	22	25	22	22	22	22	22
Inbuilt Screen	NO	NO	YES	YES	YES	YES	YES
Connect to TV	YES	YES	YES	YES	YES	YES	YES
Green Phosphor Display	-	-	YES	YES	YES	YES	YES
User Memory (RAM)	3.5K	39K	16K	32K	32K	96K	96K
System ROM	20K	20K	18K	18K	18K	18K	36K
Expandable	YES	NO	YES	YES	YES	YES	YES
IEEE-488 Interface	Option	YES	YES	YES	YES	YES	YES
RS232 Interface	Option	YES	Option	Option	Option	Option	YES
Serial Bus	YES	YES	NO	NO	NO	NO	NO
User Port	YES	YES	YES	YES	YES	YES	YES
Games Port	YES	YES	NO	NO	NO	NO	NO
Memory Bus	YES	YES	YES	YES	YES	YES	YES
Plug-in Cartridges	YES	YES	NO	NO	NO	NO	NO
Peripheral Support	YES	YES	YES	YES	YES	YES	YES
Sound Generator	YES	YES	Option	Option	YES	YES	YES
Music Synthesiser	NO	YES	NO	NO	NO	NO	NO
Typewriter Keyboard	YES	YES	YES	YES	YES	YES	YES
Graphics on keys	YES	YES	YES	YES	NO	NO	NO
Cursor Control	YES	YES	YES	YES	YES	YES	YES
Function keys	YES	YES	NO	NO	NO	NO	NO
Numeric Keypad	NO	NO	YES	YES	YES	YES	YES
Processor	6502	6510	6502	6502	6502	6502	6502
Height (mm)	70	70	356	356	356	356	356
Width (mm)	405	405	419	419	419	419	419
Depth (mm)	200	200	470	470	470	470	470
Weight (Kg)	4.2	4.8	22.7	22.7	22.7	23.4	24.0
Voltage (VAC)	240	240	240	240	240	240	240
Frequency (Hz)	50	50	50	50	50	50	50
Power (Watts)	25	45	120	120	120	130	140

DISK UNIT SPECIFICATIONS

MODEL	D9060	D9090	8250	8050	4040	2031	1540
DRIVES	1	1	2	2	2	1	1
HEADS/DRIVE	4	6	2	1	1	1	1
INTERFACE	IEEE	IEEE	IEEE	IEEE	IEEE	IEEE	SERIAL
MEDIA*	Fixed	Fixed	DS,SD	SS,SD	SS,SD	SS,SD	SS,SD
STORAGE CAPACITY							
Unformatted	6.38Mb	9.57Mb	-	-	-	-	-
Formatted	4.97Mb	7.46Mb	2.1Mb	1.06Mb	348Kb	174Kb	174Kb
Sequential File	full disk capacity	full disk capacity	2.1Mb	1.06Mb	174Kb	174Kb	167Kb
Relative File	full disk capacity	full disk capacity	1.04Mb	182Kb	171Kb	171Kb	168Kb
DISK FORMATS							
Cylinders(Tracks)	153	153	77	77	35	35	35
Sectors/Cylinder	128	192	-	-	-	-	-
Sectors per track	32	32	23-29	23-29	17-21	17-21	17-21
Bytes per sector	256	256	256	256	256	256	256
Blocks Free	19442	29162	4166	2052	664	664	664
TRANSFER RATE							
Internal	5Mb/s	5Mb/s	40Kb/s	40Kb/s	40Kb/s	40Kb/s	-
IEEE-488 Bus	1.2Kb/s	1.2Kb/s	1.2Kb/s	1.2Kb/s	1.2Kb/s	1.2Kb/s	-
ACCESS TIMES (milli-seconds)							
Track-to-track	3	3	3	30	30	30	-
Average	153	153	-	-	-	-	-
Head settling time	15	15	-	-	-	-	-
Average Latency	8.34	8.34	100	100	100	100	-
RPM	3600	3600	300	300	300	300	-
File Interface (ALL MODELS): Shared memory - (2114) 4Kb RAM							
PHYSICAL DIMENSIONS							
Height (mm)	140	140	181	181	181	144	97
Width (mm)	210	210	381	381	381	204	200
Depth (mm)	385	385	394	394	394	370	374
Weight (Kgs.)	9.5	9.5	12.6	12.6	12.6	8.0	4.5
ELECTRICAL (ALL MODELS)							
Voltage (VAC)	240	240	240	240	240	240	240
Frequency (Hz)	50	50	50	50	50	50	50
Power (watts)	200	200	70	60	60	50	25

SS Single Sided Floppy Diskette SD Single Density Floppy Diskette
DS Double Sided Floppy Diskette DD Double Density Floppy Diskette

PRINTER SPECIFICATIONS

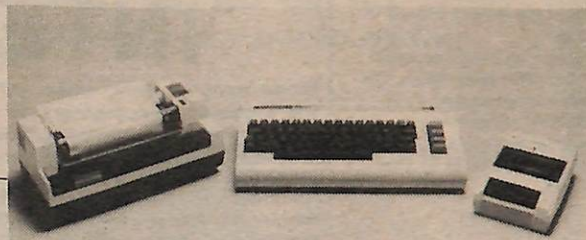
MODEL	8023	4022	1515	8300
Print Method	Dot Matrix	Dot Matrix	Dot Matrix	Daisy Wheel
Letter Quality	Pseudo	-	-	YES
Character Matrix	5x8	-	5x7	-
Characters	Upper/Lower	Upper/Lower	Upper/Lower	Upper/Lower
Graphics	YES	YES	YES	NO
Dot Addressable	YES	YES	YES	-
Interface	IEEE	IEEE	Serial	IEEE
Print Formatting	YES	YES	NO	NO
Expanded Print	YES	YES	YES	NO
Reverse Print	YES	YES	YES	NO
Bidirectional	YES	YES	NO	YES
Logic Seek	YES	YES	NO	YES
Char. Size (mm)	2.94x1.04	2.94x2.04	2.82x1.76	-
Print Speed	150cps	70cps	30cps	40cps
Columns	136/250	80	80	132/158
Character Spacing	10 cpi	10 cpi	12 cpi	10/12 cpi
Linefeed Spacing	Prog.	Prog.	6/9 lpi	Prog.
Paper Feed	Tractor	Tractor	Tractor	Tractor
or Friction	or Friction	or Friction	or Friction	or Friction
Paper Width	5-15"	5-10"	4.5-8"	5-15"
Copies	3	3	3	3
Ribbon	Cartridge	Cartridge	Cassette	Cartridge
Height (mm)	180	100	132	248
Width (mm)	530	380	328	560
Depth (mm)	380	320	172.5	510
Weight (Kg)	14	9.2	2.5	36
Voltage (VAC)	240	240	220-240	240
Frequency (Hz)	50	50	50	50
Max Power (Watts)	100	100	15	250

SUGGESTED CONFIGURATIONS

(Prices subject to change without notice).

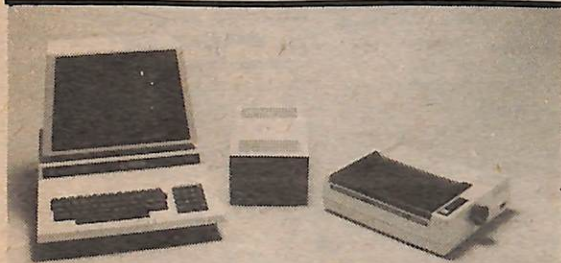
Personal System

VIC-20 Computer	399.00
C2N Datasette Recorder	99.00
VIC 1515 Graphic Printer	479.00
	977.00



Professional/Educational System

CBM 4016 Computer	1,199.00
CBM 2031 Single Disk Drive	749.00
CBM 4022 Dot Matrix Printer	1,129.00
PET to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
	3,314.00



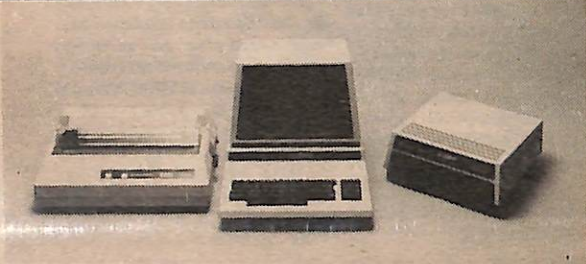
Economy Business System (4000 series)

CBM 4032 Computer	1,779.00
CBM 4040 Dual Disk Drive	1,779.00
CBM 4022 Dot Matrix Printer	1,129.00
PET to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
	4,924.00



Advanced Business System (8000 series)

CBM 8032 Computer	2,249.00
CBM 8050 Dual Disk Drive	2,399.00
CBM 8023P Dot Matrix Printer	1,709.00
PET to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
	6,594.00



COMMODORE GROWTH AMAZES STOCK MARKET ANALYSTS

With the preliminary announcement that Commodore International ended FY1982 with over \$320,000,000 in sales, the trend for steady increase over the past five years has been maintained.

The product introductions of the VIC-20 and the recently announced Commodore 64 have impressed many analysts who see Commodore heading the microcomputer manufacturers with products that are cost/performance leaders.

Analysts predict that in the United States, as much as 75% of personal computer sales will retail under \$500 within the next two years.

The low-end of the personal computer market will be the less competitive segment over the next couple of years and is the type of market where Commodore's top management has good marketing savvy.

Products such as the MAX machine have been rumoured, which when released will dominate the low end of the personal computer market. Commodore is aiming to introduce computers under \$100 in the near future with more features than current video game machines, plus the programmability that is not currently available on those types of computers.

HOME COMPUTERS

The VIC-20 is the first Commodore product to address the home computer market and the good reception has seen production volume increase rapidly from the 50,000 units per month in March 1982.

The MAX machine will be manufactured at a new facility in Hong Kong. This product is a high quality video game player that can be expanded to a home computer and a music synthesizer.

When both products are being produced, annual production volume will be in the region of 1.2-2.0 million units of VIC-20 and MAX computers.

PERSONAL COMPUTERS

The Commodore 64 will be the leader in this field. This is a new product employing the latest technology and is a clear price/performance leader.

BUSINESS COMPUTERS

In addition to the current CBM 8000 series of microcomputer, Commodore will introduce next year a new generation of microcomputers.

The Commodore 'P' series is a software compatible range of colour computers starting with 128,000 characters (128K) of user memory. These systems are

designed for use with a separate colour monitor or TV input via a RF modulator.

Existing Commodore peripherals will plug into the 'P' series computers via an IEEE-488 interface.

In addition to the standard text display of 40 columns by 25 lines, there is a high resolution display of 320 by 200 dots (pixels).

Sixteen colours are available for text display or graphics, together with special sprite graphics for outstanding visual effects.

Two control ports are included which may be utilized for joysticks or other peripherals as required.

Featuring 256K bytes of memory the 'BX' series has a second processor, a 16 bit 8088. The 'BX' series is software compatible with the 'B' series but will also support CP/M-86 programs.

VERTICAL INTEGRATION

The impressive price/performance shown by Commodore is a result of a deliberate strategy of designing proprietary chips and the system at the same time, enabling optimization at the system level.

Since LSI chips take up to two years to design, Commodore has gained valuable competitive lead



Series 700



Series 500

The Commodore 'B' series is a software compatible range of professional computers starting with 128K of user memory. This series features an attached display and integral disk drives.

Like the 'P' series, the 'B' machines are also compatible with the full range of CBM peripherals, allowing them to be easily expanded as needs grow.

Advanced 16 bit professional computing will be catered for with the 'BX' series which is an enhanced version of the 'B' series.

Advanced Word Processing/Business System

CBM 8032 Computer	2,249.00
CBM 4040 Dual Disk Drive	1,779.00
CBM 8300 Letter Quality Printer	3,000.00
PET to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
IEEE to IEEE Cable	79.00
	7,265.00

Development Training System

SuperPET Computer	3,990.00
CBM 8050 Dual Disk Drive	2,399.00
PET to IEEE Cable	79.00
	6,468.00

EXPLORE A COMMODORE

CW Electronics can offer a total world of Commodore - Professional and Business systems - Personal User support - Communications systems - Service - Books etc. - Experienced Professional Staff.

The VIC Centre Import, Distribution and Retail sales of VIC-20 orientated hardware and software.

40/80 COL. for VIC-20!!

- ★ Cartridge
- ★ 40/80 Column Display (not colour)
- ★ VIC and CBM Graphics
- ★ Load all CBM/VIC Programs
- ★ All Cursor control U/L Case
- ★ Switchable form basic without losing program
- ★ No external power required

If ordered and paid for prior to 1/8/1982
PRE-RELEASE OFFER
\$353.00 (Tax & post included)
SAVING OF APPROX. \$26.00

PRICES AND SPECIFICATION COULD CHANGE WITHOUT NOTICE

from **CW ELECTRONICS VIC**

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(07) 397 0808 & 397 0888 Telex: AA 40811
In Sydney - The Microcomputer House,
116 Abercrombie St, Chippendale NSW 2008
(02) 698 7866

BUSINESS PROGRAMS & SYSTEMS

- ★ SILICON OFFICE
- ★ VISICALC
- ★ WORDCRAFT
- ★ EBS SYSTEMS
- ★ GENERAL LEDGER
- ★ STOCK CONTROL
- ★ PHARMACY SYSTEM
- ★ CASH BOOK

VIC CENTRE "talk to the world" offer
(a amateur radio special)

- ★ NEW WORLD TDK-20 and Morse interface \$219
- ★ VIC CENTRE AFSK Modulator \$48
- ★ 2 x 6 Volt transformer \$6
- ★ User port plug \$5
- ★ Free installation
- ★ VIC-20 Computer

Purchase the total package \$650 (In one go)
total \$677

time. Management has copied the Japanese strategy of being a low-cost producer, which should allow

it the luxury of spending the marketing expenses necessary to increase its market share.

Commodore will certainly be one of the few manufacturers providing a range of 'Solution Machines'.

COMMODORE FINANCIAL HIGHLIGHTS

	(000's omitted except per share amounts)					
YEAR ENDED JUNE 30	1983*	1982*	1981	1980	1979	1978
Net Sales	\$35,000	\$22,000	\$186,500	\$125,600	\$ 71,100	\$ 50,200
Gross Profit Margin	-	-	44.4%	40.3%	32.5%	30.5%
Net Profit Margin	-	-13.4%	12.9%	8.4%	6.8%	-
Net Income	\$ 91,400	\$ 41,500	\$ 24,900	\$ 16,200	\$ 6,000	\$ 3,400
Shareholders' Equity	-	-	\$ 61,600	\$ 35,500	\$ 20,800	\$ 12,300
Earnings Per Share	\$ 5.50	\$ 4.00	\$ 2.42	\$ 1.56	\$.62	\$ 1.08
Average Shares Outstanding	10,300	10,300	\$ 10,307	\$ 10,395	\$ 9,720	\$ 3,157
QUARTERLY EARNINGS PER SHARE						
			1980-81	1979-80	1978-79	1977-78
September 30	-	-	\$.44	\$.30	\$.12	\$.23
December 31	-	-	\$.56	\$.30	\$.14	\$.25
March 31	-	-	\$.66	\$.38	\$.15	\$.27
June 30	-	-	\$.76	\$.58	\$.21	\$.33

* Estimated values only



GOLDEN FLOPPY AWARD

Nigel Shepherd said that Commodore's emergence as a sponsor of sport related to the increasing computerisation of sport.

"Football teams and clubs all over the world are using our micro computers to plan their training, predict performance, and control finances," he said.

"Choice of a marathon as our first involvement seemed appropriate because it requires

both speed and endurance - just like a good computer!"

However, for celebrities such as Ita Buttrose, Noel Ferrier, Jonathon Coleman and Len Evans, the actual marathon race was run for them by 'proxy' runners.

Experienced runners were drawn by computer (CBM 8000 series of course!), to randomly match celebrities who chose to 'compete' from the sideline.

The 'winner' of the celebrities race was Gordon Elliot who received the Golden Floppy Award.

The race was very successful with over 800 competitors. The results were processed on a CBM 8000 series computer, with a program aptly titled 'Marathon Manager', developed by Dirk Williams.

Some industry's have Logies or Grammys, Commodore has the 'Golden Floppy Award'.

This year, the N.S.W. Marathon Championships had a new sponsor in the shape of one of the world's biggest computer companies, Commodore Computer.

The 1982 championship incorporated the Australian Defence Services Marathon Challenge and was run on the State's safest, and potentially fastest, marathon course through the Holsworthy army complex.

The first man and woman to finish both won an Air New Zealand return air fare to compete in the Auckland Marathon in New Zealand.

All those who finished within the official time limit (five hours) were eligible for random draw prizes, which included two VIC-20 Colour Computers.



THE COMMODORE COMPUTER NUMBER 1. FOR BUSINESS.

IT COSTS LESS AND DOES MORE THAN COMPARABLE SYSTEMS.



Many experts rate the Commodore CBM 8032 as the best desk-top computer in its class. Yet it costs less than comparable systems. (In some cases, much less). And with over 100 software applications to choose from, the CBM will give you the competitive edge, increase your productivity and quickly pay for itself.

At Commodore we maintain our No.1 business rating in many ways. For example: Every Commodore programme is tested or even specially written for Australian businesses. And all our equipment is built by us from the chip up.

Experts call our equipment "user-friendly". It was Commodore who got rid of computerdom's Big Brother image and replaced it with a desk-top friend to more than 250,000 businessmen and women around the world. Almost anyone can learn to use a Commodore within a few hours.

They simply make work more pleasant, accurate and productive. They also develop and extend your talent and capabilities. That's another Commodore No. 1 that you can rely on!

Then there's value for money... Something else you can rely on.

FULL SERVICE, FULL SUPPORT
Commodore dealers throughout the country offer prompt local service.

COMPARE THE ALTERNATIVES AND YOU'LL SEE WHY COMMODORE IS THE COMPUTER TO BUY

	CBM 8032
Price: Under \$7,000.00	✓
Computer Memory (RAM+ROM): Total= 50K	✓
80 Characters Per Line	✓
Built-in Green Display Screen	✓
Separate Numeric Keypad	✓
Standard Upper & Lower Case Characters	✓
5 1/4" Dual Disk Storage Capacity - 1,000,000 Characters	✓
National & Local Service/Support	✓
Over 250,000 Desk-Top Computers Sold World-Wide	✓
Over 100 Software Packages	✓
Over 23 Years in Technology	✓

Commodore is not only a world leader in technology, reliability and design, it's a solid corporation too. Already hard at work looking after your needs in the years ahead. Learn more about Commodore, the micro-computer you can depend on. Call or write for the name and location of your Commodore dealer nearest you.

For further information:-

Desktop Computer Systems

10 Cowper St.,
Granville 2142

Ph: (02) 637 3062

commodore
COMPUTER

DESIGNING COMMODORE INTERFACES

Since early in 1979, when the Commodore computers first came to Australia, MicroPro Design has been involved in the design and manufacture of specialized add-on equipment for these machines. Early developments included an IEEE-488 interface for the Diablo Word Processing printers and IEEE bus interfaces for RS232 and Centronics protocols. There have been a number of significant developments and enhancements since then, which have broadened the scope of the Commodore computers business, scientific and leisure activities.

We currently supply many interfaces, which have proved their reliability and are widely used.

In particular, the RS232 and Centronics Printer Interfaces allow the Commodore PET/CBM computers to be employed economically with many printers using these standards. They provide on-board code conversion from PET CODE to standard ASCII if required and find applications where the Commodore printers are unable to perform the desired task. The interfaces were designed with economy and size in mind and they fit directly on the back of the Commodore, from which they derive their power. Most standard software can be used with these interfaces.

and provides connections on the rear for the IEEE-488 (GPIB) bus and RS232 interface standards. Indicators provided on the front of the unit are for diagnostic aids on internal self test and to give visual indication of the interface's current status.

The interface is microprocessor (6502) based and will, on the initial configuration, provide for buffered bi-directional communications between computers such as the CBM and devices using asynchronous RS232 at any of the industry standard rates. Future enhancements allow for protocol and code conversion software as well as use on synchronous communications lines.

This unit is designed to replace the earlier unit pictured (Model 8100) which has proved itself in simple communications applications.



EPROM PROGRAMMER MPC 8301

This EPROM PROGRAMMER was designed specifically for use with the Commodore computers and provides features exceeding those of dedicated designs at a fraction of the cost. It can be used with the PET, CBM and VIC-20 models and can read or programme all currently available 1, 2, 4 and 8K byte EPROMs (in 24 pin packages).

The features available include:-

- ★ PROGRAMME AN EPROM CPU BUFFER
- ★ READ AN EPROM INTO CPU BUFFER
- ★ CHECK IF EPROM IS ERASED
- ★ PRINT BUFFER CONTENTS IN HEX
- ★ SAVE/LOAD BUFFER TO DISC
- ★ CHANGE/DISPLAY BUFFER CONTENTS ON SCREEN

All features of the programmer are controlled through MENU prompted commands on the computer screen. The software to perform the functions provided can be loaded from cassette and disc or be in an EPROM inserted in a spare slot in the computer.

IEEE-488-RICOH/DIABLO PRINTER INTERFACES

These microprocessor-based interfaces were designed to allow word-processing quality printers such as the Ricoh RP1600 and Diablo 1345/630 to be used with the Commodore computers. They provide all necessary functions required for use with word processing packages (eg. WORDCRAFT) and are also compatible with the business software supported by Commodore.

Features such as auto-bi-directional printing, proportional

spacing and plotting are available due to the microprocessor logic which also enhances performance of the printers by optimizing any print motion where possible.

All interfaces fit inside their respective printers from which they derive their operating power.

RS232/CENTRONICS PRINTER INTERFACES MPC8101/8202

These interfaces are low-cost units designed to allow the Commodore CBM computers to use any of the wide variety of Centronics and RS232 compatible printers available in applications where the Commodore units are not suitable. The interfaces mount on the back of the CBM, plugging into the IEEE-488 bus connector and standing vertically against the rear panel. The IEEE bus is extended through the interface and presented on a PCB connector on the interface above the power cable. The RS232 or Centronics output connector is positioned above the first cassette port. (Note the Centronics interface comes complete with a two metre cable.)

The interfaces have full selectable addressing on the IEEE bus. The RS232 interface has selectable word length, parity and baud rates up to 19.2K baud.

BAR-CODE READER

The MicroPro Design Bar-Code Reader is based on a small hand-held wand which plugs into an unused cassette port on the Commodore.

Using software in EPROM inside the CBM, it is possible to read all standard bar-codes used for product numbering. These standards include the Australian APN (8 and 13 digit code), the European EAN and American UPC codes.

The software is designed so that applications programmes in the Commodore can easily input a scanned bar-code, or verify a manually entered number for accuracy.

CBM MEMORY UPGRADE

This module is a small printed circuit board assembly designed to be plugged directly onto the memory expansion connector of the 8 and 16K Commodore computers. It allows these machines to be rapidly upgraded to the full 32K possible, without modification of the CPU.

Power for the module is derived from the computer and all necessary cables are provided. Installation takes only a few minutes.

Further Information

Detailed information on all MicroPro Design products is available on request. Full operational specifications are given in extensive manuals provided with all equipment. This includes software notes and full schematics.

MicroPro Design will continue to develop equipment for use with the Commodore computers and has a commitment to continue high standards in design and manufacture. We look forward to your enquiries regarding devices already in production and new or custom developments.



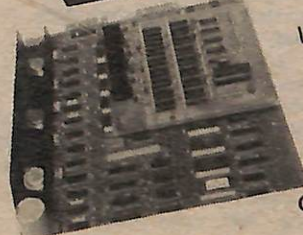
**EXPLORE A
COMMODORE**

Put your VIC-20
"On The Air"

The Interface
Your VIC-20 becomes a complete CW/RTTY/ASCII send and receive terminal with **The Interface** linking it to your transceiver.

Software for the VIC-20 features split screen display, buffered keyboard, status display, and message ports. Attach any Centronics compatible printer for hard copy. Software (**HAMSOF**) is available in clip on cartridge.

The Interface \$299.00
HAMSOF \$ 78
CW Electronics
see our advt. page 7



MicroPro Design
Pty. Ltd.

SPECIALISTS IN COMMODORE INTERFACES

- RICOH/DIABLO WORD PROCESSING PRINTER INTERFACES
- IEEE-488 - RS232 COMMUNICATION INTERFACES
- CBM RS232/CENTRONICS PRINTER INTERFACES
- UNIVERSAL EPROM PROGRAMMER
- BAR CODE READER
- CBM MEMORY UPGRADE MODULE

We can provide off-the-shelf delivery, or custom make any Commodore interfacing to your individual requirements.

MICROPRO DESIGN PTY. LTD.
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CROWS NEST N.S.W. 2065
or P.O. BOX 153, NORTH SYDNEY N.S.W. 2060

MOS TECHNOLOGY IS COMMODORE'S 'EDGE'

Chip manufacturer to develop new generation for micro maker

VALLEY FORGE, PA - Back in the fall of 1976, before there was any microcomputer market to speak of, Commodore International acquired MOS Technology to help its struggling calculator business. (MOS had designed the 6502 chip, which is found today in innumerable microcomputers, including models by Apple, Atari and Hewlett-Packard).

"We were looking to build something more intelligent a personal computer [around the 6502. We didn't know then what the market would be, but we decided to find out," said Jack Tramiel, Commodore founder and chief executive officer.

MOS Technology turned out to be a key part of Commodore's present and future plans for success, which are based on the idea of being a vertically integrated company.

Most other microcomputer manufacturers (two exceptions are Zilog and Intel) have to buy chips developed by other companies - often MOS Technology - and then design a system from that point.

"About a year ago, it was decided that the new generation of [Commodore] chips and systems would be designed



here at this facility," explained Albert Charpentier, systems design manager at MOS Technology.

We can take three paths, essentially: the chip group goes off and begins designing

any special-purpose custom LSI (large-scale-integrated) chip; the boards can be designed simultaneously; and also we can begin to develop the plastic. We have control over the entire aspect of the

design. That's our competitive edge," said Charpentier.

In fiscal 1981, MOS technology sold about 60% of its output to other manufacturers. That percentage is getting higher, according to Tom O'Donnell, a vice-president at MOS Technology. Companies such as Apple don't buy their chips directly from MOS Technology, but they do buy from one of MOS's several licensed manufacturers, which in turn pays royalties to MOS for the design.

Today MOS Technology provides Commodore with virtually all of its micro-electronic technology. "We have a systems-design group, which decides what new technologies are required to develop systems, and a totally self-sustaining semiconductor facility that designs all the Commodore products using an expensive array of computer-aided design systems. We do design analysis using computers and terminal interfacing with large mainframes outside the building. We make all of our masks, through which the wafers are processed, and we have a total wafer fabrication operation here," explained O'Donnell.

What finally leaves the MOS plant is integrated circuits, which then go to Japan or California for final assembly into computers.

There is also a systems/

COMPUTER SYSTEMS DIVISION

(71% of fiscal 1981 sales)

Manufacturing Facilities:

Santa Clara, California • Braunschweig, West Germany

Assembly Facilities:

Santa Clara, California • Braunschweig, West Germany • Tokyo, Japan (subcontractor)

Major Distribution Facilities:

Seven major U.S. Cities • Toronto, Canada • Slough, England • Neu Isenberg, West Germany • Basel, Switzerland • Horsens, Denmark • Breda, Holland • Oslo, Norway • Tokyo, Japan • Hong Kong • Sydney, Australia

SEMICONDUCTOR COMPONENTS DIVISION

(19% of fiscal 1981 sales)

Manufacturing Facilities:

MOS Technology, Valley Forge, Pennsylvania

Manufacturing process: N-Channel silicon gate

Frontier Manufacturing, Costa Mesa, California

Manufacturing processes: C-MOS metal gate and N-Channel silicon gate; within 12-18 months, C-MOS silicon gate

Optoelectronic Division, Dallas, Texas

Manufacturing process: Liquid crystal displays (LCD's)

CONSUMER PRODUCTS DIVISION

(4% of fiscal 1981 sales)

Consumer Products Group, King of Prussia, Pennsylvania

Commodore Business Machines (U.K.), Ltd., Slough, England

OFFICE EQUIPMENT DIVISION

(6% of fiscal 1981 sales)

Commodore Business Machines Ltd., Toronto, Canada

assembly facility in Santa Clara, California. A support facility in Costa Mesa, California, is working on a CMOS version of the 6502 and 6500 series of micropro-

cessors that will provide

product line in the future. "The aggregate production of the corporation will double for the next foreseeable few years," said Charpentier.

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MICROCOMPUTER SYSTEMS DESIGNERS

WHO'S THE TOY FAN? AGE GROUP OF BUYERS SURPRISE COMMODORE.

Messing about with mechanical toys, the traditional second-childhood hobby of older men, is becoming old hat, says the managing director of Commodore Computers, Mr Nigel Shepherd.

Out go the planes and the train sets and in comes the latest in high-technology toys: the home microcomputer.

Mr Shepherd came to this conclusion after reviewing the results of a questionnaire sent out with Commodore's newest low-price hobby computer, the VIC 20.

At \$399 it is definitely geared to hobbyists, but the survey gave Commodore an opportunity to find out more about their buyers.

Mr Shepherd said he was staggered by the results.

"We included an age-bracket question," he said "I suppose we took it for granted that given the games capabilities of the VIC, most buyers would fall into the 15-21 age group.

What we found, in fact, was that around 80 per cent of VIC buyers were aged between 30 and 60.

"The microcomputer has really taken off as a leisure activity, far above our expectations, and in an age group that is among the most common users for hard business purposes.

These are the buyers who would have been playing with crystal radios or train sets 30 years ago." He puts the age-group interest factor down to three reasons: the determination to get on top of a new piece of technology that is dramatically changing our lives,

the discovery that the price is within the reach of most budgets, and the realisation that what started as a grim task has turned into an almost limitless field of amusement, discovery and useful leisure potential.

"You can see it in any newsagent on a Saturday morning," he said. "Just look at the people buying electronics or computer magazines. They are a real cross-section and many of them are older married men.

An interest in computers seemed the only common denominator among the wide range of ages and interests involved with the micro boom. Perhaps, said Mr Shepherd, when the first traditional goals of car, marriage, home and furnishings had been achieved, perhaps a boat, and when the family was tending to hold dad at home more, the obvious hobby, status activity or time-filler was the microcomputer.

"I used to work at a firm during the mid-seventies," he said, "when most big businesses were going to computers."

"I was the marketing manager and our whole business was to be computerised. Most of the staff were going to have to learn to cope with it."

ADAPTED

You'd expect teething troubles for the first few weeks, with procedure changes and the need for new ways of thinking.

"But the people who had been with the company longest and who held the most senior positions were the ones who had the most trauma."

The operators, and those who were using the computer most, had little difficulty, he said.

They were retrained and soon



NIGEL Shepherd... a hobby - there seems no doubt that in the 40-60 age group we are finding a large sector of happy computer addicts." Whatever their reasons for taking a machine home - to learn more for work, as a status symbol or purely as

adapted to the new way of doing business.

"But the upper management, who were not working with it on a day-to-day basis, seemed to have a lot of trouble adjusting themselves to the new aspects of their life.

"If anything went wrong or the results were unusual, the computer got the blame.

"It immediately became evident that those who had shrug their shoulders and said to themselves, 'It's arrived, I'd better learn to live with it', coped best.

"Perhaps they were a little more aggressive in their approach. They got stuck in and beat it.

"Within weeks they were the people who used the computer with ease and speed, while those who had reacted a little more suspiciously were still taking hours over simple tasks."

"One reason these people adapted to the computer so quickly," he said, "was that they took every opportunity to use it that came their way.

"But where they were looking at a \$30,00 computer in those days, now they just spent a few hundred dollars to go out and buy one of their own.

In doing so, they became more and more absorbed as they learned more about it.

Another way into this type of computer use was directly through the business market.

"I think the people who reacted aggressively to understand their machines are the same type of personality as many of the businessmen who are buying micros for small business application," Mr Shepherd said.

"There could be many reasons,

but I think attitude is important."

"Whatever their reasons for taking a machine home - to impress the boss, to learn more for work, as a status symbol or purely as a hobby - there seems no doubt that in the 40-60 age group we are finding a large sector of happy computer addicts."

"So many of their computers begin merely as another tool of trade. But where they originally bought it to handle, say, debtors or stock control, they say, 'Hey, I can handle my correspondence on this'."

"Then they start doing word processing, costings - the deeper they go the more rewards they find."

"What has definitely opened the door is the fact that price has put computer power into the hands of so many people."



Commodore Computers

commodore COMPUTERS



s. The solution machines.



COMMODORE COMMUNICATES WITH THE WORLD

One of the most exciting areas of microcomputing, is in the area of data communications, with the advances in technology opening new applications. By connecting a Commodore Computer to a MODEM (stands

for MODulator DEModulator) the Commodore can now be used for an incredible variety of different tasks. For example: Database access - Some people due to their professional activity, have to keep in touch with commodities such as stock

exchange, price of raw materials, economic indexes on a daily basis. Scientists and researchers have to survey a very large amount of information through cross references about certain topics. Today this information is stored in computers as it is so bulky, expensive and

quickly obsolete to be printed in books. The number of databases is growing rapidly. There are databases in Australia called CSIRONET, provided by the CSIRO, or the Australian Beginning, a general purpose database available from Melbourne or via the OTC data communications system MIDAS, you can access virtually any computer database in the world. The topics covered by these computer database's are as wide ranging as Agriculture, Chemistry, Medicine, Criminology, Music World, Energy, Philosophy and many more.

One of the main advantages of using a Commodore Computer to provide access to one of these data bases is cost. The user is generally charged on the amount of information retrieved and the amount of time connected. Using the Commodore microcomputer you can retrieve the information you desire very quickly and store it in the computer where it can be reviewed at your leisure, thus reducing the chargeable time connected.

Apart from using a Commodore to talk to data bases, there are other applications where it can be very useful. If, for example, you were a business man with more than one office, you could install in each branch office a Commodore business system which does all your accounting, word processing, and stock control etc. By using Modems and the Commodore communication software, it would be possible to transmit over your phone lines, all your accounting and stock information to Head Office for processing and report generation. It is even possible to write a letter at one location using the Commodore Wordprocessing software and transmit the letter over the phone to another location where it can be printed out. A rival for Australia Post?

The Commodore VIC-20 computer and modem configuration, is probably the cheapest terminal

for data communications now available in Australia. It represents the best value for money for people who are on a tight budget, yet still want to get into microcomputers and data communications. Micro-computer hobbyists can now access data bases or communicate with each other and swap programs, games or files.

One of the more exciting advances in data communications is Prestel. These massive public data bases have vast amounts of information for everyone, from the housewife to the businessman. They are very easy to use, just like an electronic magazine. They use your existing colour TV sets and your phone. In the UK, the Prestel service is run by the British Telecom and already has over 20,000 subscribers. There are Prestel adaptors for both the CBM and VIC range of microcomputers. Currently there are several Prestel like systems being set up in Australia.

Advanced Communications

In addition to using Commodore microcomputers as simple terminals communicating to data bases or to each other, there are a variety of communication products which connect the Commodore to more advanced networks to provide terminal emulation and distributed data processing functions.

One device available, connects to the Commodore and allows it to be used as a teletype style terminal or as an intelligent terminal (depending on software). It has an RS232 asynchronous port, which can be used at speeds up to 19,200 bits per second, with full control of stop bits, parity, wordlength, etc. Using this RS232 communication device the Commodore can also be connected to the Auspac packet switching network as a X.28 compatible device.

For binary synchronous networks, there is the DRL communications controller which is a multi-

protocol device that allows Commodore microcomputers to be connected to a variety of different types of networks. The DRL controller is a soft loaded device that supports IBM 2780, 3780 batch protocols or IBM 3270 terminal protocols. The DRL controller provides the Commodore with full 3276 terminal emulation as well as an interface between the Commodore BASIC language and the mainframe. This facility is a very useful one for distributed data processing applications.

Commodore in conjunction with the Systems Technology 3703 SNA/SDLC controller, lets the Commodore SuperPET computer

be connected to any SNA type communications network. This particular configuration is an incredibly versatile and cost effective solution for DDP type applications. The SuperPET supports "industry standard" languages such as APL, BASIC, FORTRAN, COBOL, PASCAL etc. and a very versatile set of communication facilities, allowing the SuperPET to be used as either a terminal or as a front end processor to a mainframe (Host). Commodore certainly have all the communications options covered. No matter who or what you want to talk to, Commodore can provide a solution.

THE ELECTRONIC COTTAGE

Marie lives in Ryde; has two small children at the local school; is an experienced typist, bookkeeper and secretary.

During school hours Marie subcontracts text entry for magazines and other publications. Working from home she operates a Commodore 4016 microcomputer with audio cassette storage unit. Marie is typical of a growing number of text entry operators; skilled people who work their own hours and from home.

What Alvin Toffler calls the *Electronic Cottage*.

The system is simple. The text is retyped into the Commodore from the raw copy (original hand or type-written sheets) by the operator who carefully proofreads the copy and adds some formatting commands. The disk or cassette is then sent to Mervyn Beamish Graphics Pty Ltd who transfers the data into their phototypesetter which produces typeset copy on photographic paper ready

for artist or printer. Text can also be sent over the telephone via acoustic couplers.

The graphic characters on the Commodore keyboard are utilised by MBG as command, or formatting, keys. "The Commodore is ideal for this type of work" says Mervyn Beamish "because of its built in green screen, fast keyboard and additional graphic keys. A Commodore 4016, indeed any CBM machine, can carry out 90% of the formatting commands that our bigger machine uses - far more than the average job requires."

"I believe this Commodore Courier is an example of the system at work - all text was supplied to us on Wordcraft Disks by Commodore themselves. I doubt if the job could have been completed on time if we had used the traditional method."

For more information contact Merv. Beamish (02) 439 1827.

How VisiCalc could make you another \$100,000 this year... For only \$3499.00

What changes would it need in sales, costs, salaries, cash flow to have a dramatic impact on your turnover and profit?

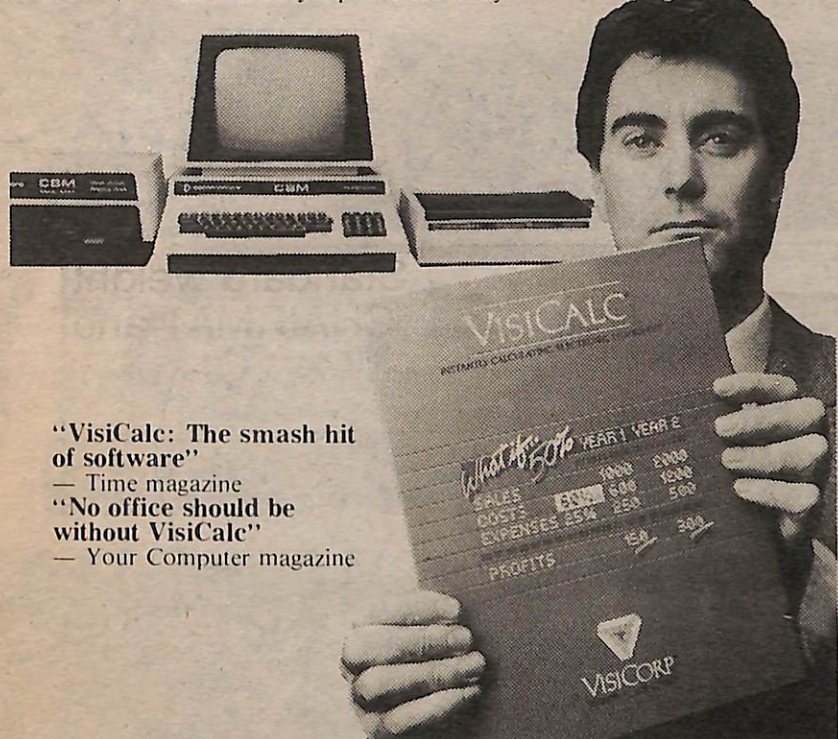
VisiCalc will give you instant answers to all these questions. That's why it's the world's best-selling computer programme for business use. More than 250,000 copies sold in two years!

Now Commodore has a package that not only gives you the computer world's best-seller, it also includes Australia's No 1 Microcomputer, the Commodore 4000 System...

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Run your business options through your Commodore and VisiCalc shows what effect each one would have. Don't play it by ear any more, Commodore VisiCalc will show you exactly what will happen. Before you spend a cent!

Talk to us or your nearest Commodore dealer for the whole story. That extra \$100,000 could be only a phone call away.



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COMPUTER

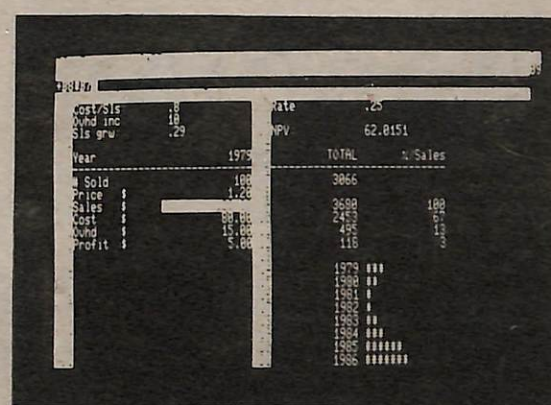
WHAT IF.....YOU HAD VISICALC

VISICALC software displays a large electronic worksheet on the screen of your Commodore computer that replaces paper, pencil and calculator to automatically solve nearly all number problems.

Just type in labels, numbers and mathematical formulas and VISICALC instantly calculates the results. Then play "What if?" - change one variable and VISICALC automatically recalculates the entire problem so you can see the results on the screen immediately.

Recalculation makes VISICALC a powerful planning and forecasting tool. Not only can you effortlessly correct mistakes and omissions, you can also examine various alternatives.

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overall profit and make the necessary adjustment to your pricing.

Once you have established the format for a particular application, you can save the entire electronic sheet on your diskette for retrieval

at a later date and you can print all or part of the sheet on a printer.

The many applications of VISICALC include; cash flow analysis, production and inventory levels, income statements, balance sheets, job costing, budgets, office

expansion programs, pricing, calculating landed product costs plus many more.

In fact if you are doing any calculation by hand now, you can probably do it simpler with VISICALC.

CONFIGURATION

The package as supplied will work with the following Commodore computers;

CBM 4032 40 column computer with 32K user memory
CBM 8032 80 column computer with 32K user memory
CBM 8096 80 column computer with 96K user memory

All Commodore disk drives and printers are supported by VISICALC in addition to standard ASCII printers that are correctly interfaced.

commodore COMPUTER

CBM 8000 Series



BUSINESS COMPUTER SYSTEM

The CBM 8000 desk-top computer is an integrated, cost-effective, simple-to-use method to improve your business or professional operation. It is a tool you can use to manage information the way you want to... when you want to.

The CBM 8000 desk-top computer will help manage your cash, run your books, control your inventory, process your words and make your business more profitable. All this can be obtained at a system cost that is surprisingly affordable.

The CBM 8000 desk-top computer, as a management tool, delivers information to all levels of business and produces results previously attainable only with equipment many times more expensive. Whether your application is personal, professional or highly specialised and whether you are a small business or major corporation, the CBM 8000 desk-top computer can meet your needs.

FOR A LIMITED PERIOD ONLY INCLUDED IN THE SPECIAL PRICE IS THE CHOICE OF ANY TWO OF THE FOLLOWING SOFTWARE PACKAGES

General Ledger - Creditors - Debtors - Stock Control
Word Processing - Data Management System - Electronic Cashbook
Visicalc

This package is available from:

Compute CBM SYSTEMS

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MOTOR INDUSTRY ACCEPTS COMMODORE

One of the exciting growth areas within the motor dealer industry, is the existence of specialist Finance and Insurance consultants to advise prospective motor vehicle purchasers of the advantages or disadvantages of finance verses cash in today's money market, or in the area of insurance, where the client can get the best protection for the right price.

During the last few years, the task for these specialist consultants has been more than complex and time consuming as interest rates keep going up and tax laws continually change. The simplicity of their work has been gradually eroded, especially in the case of the businessman who wishes to know whether or not he should pay cash or if he should purchase on a lease or hire-purchase agreement.

Compute F&I Systems, who are a division of Compute CBM Systems, have been involved in this particular type of consultancy work for several years. In mid 1979, Compute realised that the F&I industry needed some form of assistance if it was going to cater to the changing trends of the future. After much searching of the microcomputer industry, Compute decided that to achieve their aims of providing a realistic, presentable and serviceable sales aid to the motor industry, the Commodore



Mr Graham O'Neill demonstrates Compute's F&I system to prospective clients. Note the revolving screen on the computer, thus allowing the user full control over the keyboard to change the calculations demonstrated.

4000 series computer would perform within the guidelines demanded. To ensure the best possible use and marketability of the F&I system, Compute designed a unique method of rotating the screen of the computer 110 degrees either side of the centre, thus allowing the customer to be involved in the calculations that the consultant was preparing. Another factor that greatly concerned Compute was how to keep the system cost to a realistic value when considering the application and the marketability of the product. The amount of program required to perform the task was a massive 94K of RAM. At that time, no such microcomputer existed. The use and cost of a disk drive could not be warranted. Realising Compute had a problem, they put to work their designers and produced a special EPROM card that fits

inside the computer, thus holding the program in permanent memory, ready for access at any time by the computer. This design concept was unique and has allowed Compute to be recognised throughout Australia as leaders in this specialist market. Security of Compute's program was no longer a problem and price was controlled within the guidelines required.

Today over 160 of these Commodore computers are used by Motor Dealers throughout the industry. Many customers have remarked about the professional service available from motor dealers who use the computer system, and in many cases, the consumer has been saved many thousands of dollars. Compute have reflected upon their success in this field many times and are always glad of their decision to use the Commodore microcomputer.

EXPLORE A COMMODORE PETCLOCK (clock/calender)

Plugs directly into the user Port of any Commodore CBM computer. It displays on the screen day, month, year in which ever order you require; can be accessed into other programs and need no power supply; a lithium battery is mounted internally, and will power the clock for 10 years even with the computer turned off?

\$152.00
CW Electronics
see our advert page 7

As Graham O'Neill, the General Manager of Compute F&I Systems remarked, "Several people have tried to tackle this specialist market with various brands of computers".

"Our success lies in the fact that we are specialist in the industry and therefore know how the motor dealer, the customer and the consultant feels. Because of this experience we were able to produce one of the most versatile F&I programs available on the Australian market".

Mr O'Neill concluded by saying, "But we must state, that our design techniques and success in the industry would not have been possible if we did not select the Commodore 4000 series system. The Commodore product has certainly lived up to its reputation for reliability and performance".

TAYLORS COLLEGE

- Commodore at school

TAYLORS COLLEGE, A Melbourne based Senior Secondary School, has purchased 5 Commodore micro-computers for classroom use. The computers are being used to give students practical experience of programming and computer aided learning at year 11 and 12 level.

Taylor's also have a Commodore 3000 series computer system complete with a disk drive and printer which is used for administrative tasks and for more advanced students in the Computing Science course.

With the additional computing capacity now available, Taylor's have undertaken evening



Computer Programming courses in BASIC which are open

to the general public. Mr Robert Read, Principal of

Taylor's College, said that the school purchased Commodore because the units offered compact powerful portable computing facilities for a reasonable price. Mr Read added "the machines are so reliable and rugged, that we have not had a machine break down since their installation over 8 months ago. I don't know of any other equipment being used in schools today which has this record of reliability".

Photograph shows the Commodore micro-computers being used in the classroom laboratory for instruction.

COMMODORE ACCOUNTING TRAINING MANUALS

Recently released, the Commodore Accounting manuals provide a reference manual for the Commodore Accounting systems and a detailed training manual.

Published in book format in two volumes, these manuals provide detailed accountancy exercises in the use of the Commodore Accounting systems. Comprehensive working examples of a company's trading is used, and the manual gives methods of batching and controlling data for entry into the Commodore computer.

Volume 1 covers the Commodore Stock and Debtors Ledgers and Volume 2 covers the Commodore Creditors and General Ledgers. Examples and procedures are given for integrating the ledgers for more detailed reporting.

At the back of each manual, a section shows with the use of flow charts, how to organise work flow and data input for a concise and logical approach to computerised accounting.

Combined with the Commodore Accounting software, these manuals are ideal for students in accountancy using a computerised system to learn all about modern day accounting.

Ideal for training new or relief operators, or just using as a reference source, the Commodore Accountancy manuals are now available from your Commodore Dealer.

NEW PRODUCT REDUCES CARPET WEAR

Computer Operators need the full chair mobility that Anchor-Stat allows and increases the comfort of using a Commodore computer at a standard desk. Gone are the days when a track is worn into the carpet by an operators chair moving around the computer. Total carpet protection is now provided with Anchor-Stat.

Anchor-Stat is elegantly styled to enhance the office decor, being made from a 100% superior quality vinyl with a 1 year warranty against chipping or cracking.

STATIC CONTROL
Anchor-Stat comes complete with a 3 metre flex for earth wiring. The product is especially designed to remove electro-static buildup from around microcomputers and similar electronic office equipment.

Static electricity is constantly present and transmitted from one person to another and to other objects. The human body can develop and transmit levels of static electricity in excess of 20,000 volts without harm. Levels of 3,000 volts would pass completely unnoticed by humans, but cause malfunctions when transmitted to micro-sensitive elements of computers and similar equipment.

To prevent the possibility of static discharge ruining the data on a floppy diskette or interrupting the computer's processing, Anchor-Stat will discharge the person when they step onto the mat, before they touch the electronic equipment.

An essential item for every office, Anchor-Stat not only gives carpet protection, but protection from static discharge.



Anchor-Stat Standard weight CHAIRMAT and STAND-ON MAT

The new STATIC-CONTROL MAT with a 3 metre flex for earth wiring. Colour - Black. ANCHOR STAT is made from superior quality vinyl with conductive materials and has specific application to remove electro-static build-up from around mini/micro computers, word processors and similar electronic office equipment. ANCHOR-STAT is available with, or without, the 100's of small anchors required to keep the mat firmly in place on carpet. ANCHOR-STAT is placed under the operator's chair or wherever an operator may be standing next to the equipment

3 SIZES AVAILABLE, with ANCHORS:

Large size - 1200x1500mm Rectangular.....\$229.90
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Electronic Business Systems are the Small Company with the right ideas, and because we're small we give personal service to our customers.

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Flexible Systems which are designed to suit your Company, your stationery and your pocket.

Our dealers throughout Australia would be proud to show you any of the EBS Professional Systems. There's one in our range just for you.

These are some of our Professional Systems —

Debtors, Stock Control, Creditors and General Ledger — Can be tailored to varying individual needs and requirements. Flexible and Cost Efficient.

Public Accountants Package — From data entry to balance sheet with full printed reports. 6 means of data entry including comprehensive bank statement entry. Totally flexible chart of accounts to suit individual client needs. Design your own report style. 2 levels of consolidation.

Transport Accounting Package — Designed for the small to medium operator. Easy to operate, reasonable price. From single entry from docket book, details of all records are automatically updated to invoice statements.

Vic Cashbook — For the Vic Commodore and double up for data capture for Public Accountants Package. Provides up to 50 Columns of distribution of income and expenses.

Debtors Data Capture for Vic 20 — Make the Vic 20 more than a 'toy' — a really useful work tool at a very economical price. Allows small business people to control their own debtors accounting and produce statements without the high outlay.

WordPro Plus Series — A Family of word processors. EBS are the Australian Distributor for this world marketed product. Simple to use word processing with the power and capability only found in dedicated word processors costing thousands more.

InfoPro — User oriented Information Management System. Use for mailing lists, employee records, electronic filing systems. Merges with WordPro Plus to create hundreds or thousands of personalised letters.

Power — Programming Utility which makes writing programs easier. A powerful utility with features not available in other programming tool kits. eg Scrolling power allows you to list a program and scroll vertically without relisting and automatic line renumbering.



If you're in the market for any EBS Systems, call your local EBS Software Dealer, or

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electronic business systems

EBS WORLD LEADERS IN COMMODORE SOFTWARE

Electronic Business Systems are a Dubbo based computer software company, who believe that if a market does not come to you, then you must go to the market.

Originally an office equipment retailer, EBS has become one of the leaders in writing flexible, easy to understand systems for Commodore equipment sold both in Australia and to the world.

The company could see the large market in Australia for more specialised computer programs than were currently available, but customised programs were in most cases beyond the reach, financially, of small businesses.

The company is owned by Barry Barnes and his wife Margaret who recently decided that their products could be sold successfully in overseas markets.

They commenced exporting computer programs from the mid western NSW city of Dubbo to USA, Canada and New Zealand.

"We decided to export our programs to the overseas markets in order to offset the high cost developing our software", Mr Barnes said.

After some months of ground work EBS commenced exporting their products into the USA, probably the most competitive in the world.

Over 3000 individual systems were sold into the USA market during this initial period.

The two program types sold in this market were the EBS Accounts Receivable System and the EBS Inventory System.

Meanwhile in the Australian market, EBS were developing new products to meet the increasing demand for a wide variety of customers.

To date, EBS have developed such programs as;

EBS DEBTORS & STOCK CONTROL

A very powerful integrated software package with features and performance previously available only on minicomputers in the \$15,000 and up price range.

When this system is run on the Commodore hardware, which is low cost, it offers a comprehensive and workable fully integrated Debtors and Stock Control System at a price small businesses can afford.

The capacity of the system is as follows:

- ★ 928 customer records and 6181 current transaction records for each data disk.
- ★ Up to 26 ledgers available.
- ★ 116 salesperson distributions and 348 product descriptions for each ledger.
- ★ 10 standard letters can be filed for each program disk.

- ★ 3448 stock records for each stock data disk.

- ★ Up to 9 stock data disks.

- ★ 26 user definable transaction types.

- ★ The reports which the system produces includes customer invoices, letters to customers chosen by amount and ageing, customer lists in detail and summary form, stocktake worksheets, total stock position report, customer statements, packaging slips, bank deposit slips, address labels, aged trial balance, sales tax report, and many more.

The hardware required for the EBS Debtors and Stock Control System is readily available from Commodore dealers.

EBS CREDITORS SYSTEM

This package is designed to reduce the running cost of small businesses and to keep an accurate record of amounts owed to vendors in order to

TRANSPORT SYSTEM

This system fills the accounting needs of small transport operators and parcel delivery companies. It allows a single entry from a docket to enter all files required, therefore cutting down on bookwork.

The system maintains records for customers, depots, other carriers and either employee drivers or sub-contractors.

One entry gives the operator the following information:

- ★ Entry into the customer file, transaction file (holds each docket), depot summary (summary of information supplied by the sub-depot), Sub-Contractors file, and in other carrier files (summary information by other carriers).

The EBS Transport System also at the end of the month prints invoice statements, gives summaries of reports to sub-contractors, customer lists, monthly sub-depot settlement reports and sub-contractor settlement reports.



The system is described as user-friendly, and any entry can be displayed on the screen within seconds, and the total ledger can be displayed, or displayed and printed at the same time.

WORDPRO PLUS

The Wordpro Plus word processing systems include software programs designed specifically for Commodore Computers.

There are five levels of programs available, ranging from sophisticated to basic text editing range, each has a particular application, but all have a large capacity for editing, subbing and writing.

Over 2000 installations of the Wordpro systems have so far been sold world wide.

EBS were recently appointed as the exclusive Australian Distributor for Professional Software Inc. who are the world wide distributors of WordPro.

EBS are constantly upgrading their programs and offering a wider range of product types to the Australian consumers and the world markets.



make payments promptly and maintain good credit relations with them.

The system offers many features such as a check on goods returned for credit, bulk supply discounts, on-the-spot negotiated discounts for goods received damaged or incorrectly supplied, and the occasion when a special promotional price has been quoted, but normal price is charged. These are only a few of the features in the system available to small businesses.

Another of the many important features in the system, is that it allows the company to design their own invoices, statements and other documents to suit their stationary — their own invoice layout — and it is fully flexible.

Other features in the system are:

- ★ Forecasts for your future cash requirements.
- ★ Creation of remittance advices.
- ★ A report showing ageing of all accounts.
- ★ Listing of suppliers.
- ★ Display of the total monies owed within seconds.
- ★ Cheque writing to your own format.
- ★ It also provides a wide variety of reports for you.

EBS VIC-20 DATA CAPTURE SYSTEM

This is a unique system which allows the small and inexpensive VIC-20 computer to be used as an information input base, with the information keyed into the VIC-20 computer and fed into a larger Commodore disk based computer at a later date.

It streamlines the task of data collection as all the information can be collected at the spot where it is generated, but it is still cost efficient.

The customer inserts the information into the VIC-20 at his home, office or farm and then hands over the tape to his Commodore Bureau at a later date.

All the information the computer requires is contained on the cassette, which after the Bureau has finished with it, can be returned to the client.

You can construct customer records with name, address, phone, etc as well as salespersons details, product descriptions and other information. Invoices credit notes, cash receipts, sales tax and values of distribution can also be inserted into the system.

The EBS Debtors Data Capture System is simple to operate, and does not require a major capital outlay.

EBS PUBLIC ACCOUNTANTS PACKAGE

This is one of the newer EBS systems offered in Australia.

This system is written in an easy menu form and offers all users a flexible, fully controllable accountancy package.

The Public Accountants Package is low cost and offers reduced labour costs in the preparation of clients accounts — resulting in increased productivity.

The EBS package offers up to 1500 accounts, up to 4500 transaction records, and the system supports double entry system of accounting.

It is simple to use with only a minimum of instruction time required to train an operator. Below is a summary of the functions and operation of the system:

DATA ENTRY — Payments, Bank Deposits, Journal Entry, Bank Statement, Cash Book and VIC Data Capture.

REPORTS — Posting Summary, Trial Balance, Chart of Accounts, Transaction Listing, List of unallocated accounts, full financial reports including trading accounts, livestock trading accounts, profit and loss accounts, balance sheets and assets register and depreciation schedule.

CONSOLIDATION — Individual segments of business operations can be fully reported both individually and as a whole.

EBS GENERAL LEDGER SYSTEM

This system allows up to 1000 general ledger accounts and 4500 transactions.

The flexibility of the system allows for simple and complex charts of accountS and it allows the operators to define their own reporting format.

It offers a wide variety of features not normally found in lower-priced systems including the following:

- ★ Account maintenance, daily transactional lists, summary posting listings, cheques, receipts, ledger journals, monthly transaction lists, trial balance, charts of accounts listing, hardcopy and account enquiry.

The system is flexible and does not require intensive training to allow the operator to become efficient in the use of the system.

For further information contact Barry Barnes, Suite 4, 118 Macquarie Street, Dubbo. N.S.W. Phone: (068) 82 8611.

DESKTOP SOLUTIONS

HOBART'S SPECIALIST
COMMODORE DEALER

See us for your business requirements.

- ★Silicon Office
- ★VisiCalc
- ★Home and Education



22 Murray St, Hobart.
TEL 34 6752

WORDCRAFT 80

Designed exclusively for Commodore CBM computers, WORDCRAFT 80 is a complete word processing system. It gives you virtually all the text creation and editing capabilities you will need at a price thousands of dollars less than you would expect to pay.

WORDCRAFT 80 is versatile, producing reports, memos, proposals, correspondence, mailing lists, precedent documents easily and accurately. Regardless how you use it, WORDCRAFT 80 assures the highest quality finished copy.

Commodore's professional 80-column wide display shows text exactly as it will be printed. Changes appear on your display screen as you make them, so revisions and formatting are easy and fast.

There is a selection of printers available to suit your requirements and budget, from high speed dot-matrix printers to low cost electronic typewriters.

FEATURES

- ★ Page layouts of up to 117 characters wide by 98 lines in length.
- ★ Screen displays finished format of document with no word wrap-arounds
- ★ Full typewriter keyboard with dual function keys for text editing and manipulation.
- ★ 5 status lines on the screen show position on page, left and right margins, tab settings, page number, name and date of document, disk file name and number of characters free.

- ★ System automatically keeps detailed index of documents filed on diskette.
- ★ Diskettes can be removed and inserted without losing text in memory.

Half Line Movement for Superscripts and Subscripts

This feature is available on most letter quality printers and allows printing of formula etc.

$(X^4+Y_2) \quad H_2SO_4 \quad A_9^{16}$

15*Z(12+X³)

Certain types of text require frequent changes in indentation including multiple indentation.

- a) General
 - 1. Financing
 - a) Personal capital
 - bank account
 - stocks and bonds
 - b) Outside capital

Automatic Centering
This is done automatically by WORDCRAFT 80 inserting the text in the center of the left and right margins.

Line Spacing and Pitch
Both can be selected by the operator to suit a variety of printed formats. However the printer used may restrict the full implementation of this feature.

Right Justification and Proportional Spacing
When printing text, these options can be selected depending on the type of printer used.

Deletion by Character, Word or Paragraph
Text can be deleted by simple keyboard commands and when blocks of text are deleted, the area is highlighted for confirmation before deletion.

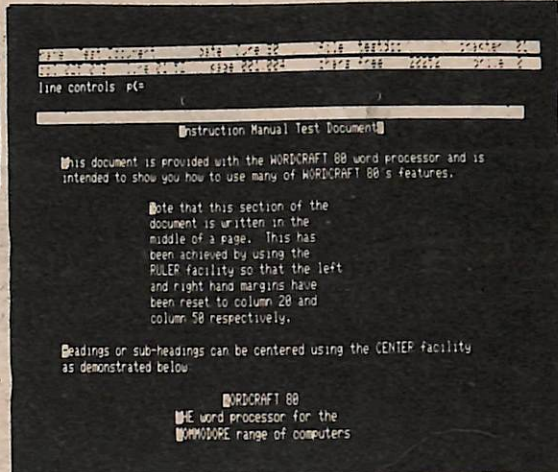
HOBART COMPANY SUPPORTS COMMODORE

DESKTOP SOLUTIONS, of Hobart, are one of Commodore's newest dealers, and they are proving that the Commodore computer is suitable for a wide range of business applications.

Since their opening in May, their customers have included one of the state's largest dairy manufacturers, the state headquarters of Bankcard for one of Australia's largest banking groups, a State Government Marketing Authority, and a small engineering and manufacturing company.

All these customers have 96K Commodore systems with either (or both) SILICON OFFICE and VISICALC. Two of them also use WORDCRAFT 80.

Manager of Desktop Solutions, Mr Tony Smithies, commented "We have found SILICON OFFICE applicable to a wide variety of businesses." "Our customers like it because it can be used in so many different areas of their business, whilst VISICALC gives them a very powerful management planning and control facility."



Decimal Alignment
Columns of figures can be aligned automatically.

554.23
1,113.80
4.77
85.2201

Word or Text Emphasis
Highlighting can be performed by underscore or by overprinting and can be selected automatically by a simple keyboard command.

Precedent Document
Documents can be created by recalling pre-typed text in random order from precedent files. This allows proposals and documents to be created, inserting standard paragraphs automatically and without having to retype standard text.

Standard Letters
Letters can be created which have variable information automatically inserted from previously stored files. This allows individual presentation of a letter without having to type each letter.

Multiple Screen Configuration
More than one screen can be connected together to share the disk drive and printer. This allows documents and information to be transferred between operators and reduces the installation cost.

Incorporate External Data
Information from other software packages can be read into WORDCRAFT 80. For example, financial data from VISICALC can be inserted into a report produced with WORDCRAFT 80.

Printing Option
Pages can be printed by single-sheet or with continuous stationery. Documents can be printed in background mode allowing the screen to be used for entering information at the same time.

Search and Replace
A character string can be searched for within the chapter in memory and replaced with another string of text.

Margin Changes
The left and right margin can be changed within the body of text allowing format changes which automatically adjust previously entered text. In addition the left margin can be changed on the printer at any time.

Headers and Trailers
These can be printed on each page with automatic page numbering and date of revision, even in book fashion (alternate left and right pages).

Block Movement of Text
Text can be moved between pages or anywhere in the document with simple keyboard commands.

PASCAL

Pascal is a high level computer language defined by Niklaus Wirth in the early seventies that has become one of the most popular computer languages. It has become a global standard as a first programming language for university computer science students and achieved popularity with microcomputer users as it offers a powerful programming environment usually found in large computers. Two implementations of

Pascal are available for Commodore CBM computers.

TCL PASCAL DEVELOPMENT SYSTEM

The TCL Pascal Development System is an implementation of standard Pascal for Commodore computers with 32K of memory space. The system can be operated as a memory based system with the editor and compiler co-resident or as a disk based system. The system implements all of the standard Pascal statements and data types with extensions to take advantage of the Commodore computer. These include hexadecimal constants, direct access to memory and I/O ports, program

chaining, keyboard and clock support, error trapping and an assembly language interface. The TCL Pascal development system is available from your Commodore Dealer for the 3032, 4032 and 8032 CBM systems in 4040 and 8050 disk formats.

UCSD PASCAL

UCSD Pascal was developed at the University of San Diego by Kenneth Bowles. The system was implemented around a p-machine system so that the system could be easily transferred to any microcomputer by rewriting the p-machine. The UCSD p-system is one of the wonders of the microcomputer world and has continued to be developed and extended by

SoftTech.

UCSD Pascal Version IV has just been released for the Commodore 8096 computer. This is possibly the most powerful programming environment available for Commodore computers supporting all of standard Pascal together with concurrent processes and a macro-assembler. The Commodore 8096 implementation supports the IEEE bus, a 32K virtual disk in the top 32K of system memory and both Commodore and ASCII printers.

Contact your local COMMODORE dealer or the COMMODORE INFORMATION CENTRE for more information about the UCSD p-System.

the editing of BASIC programs. When an error occurs, the cursor is positioned to the mistake and the correction made by overtyping or using the Insert/Delete key. The line is automatically accepted when the RETURN key is pressed.

No special editor is required to correct lines. In fact this feature on all Commodore machines makes the duplication of lines easy. If the same line of instructions is to be repeated elsewhere in the program, the line number is edited for the

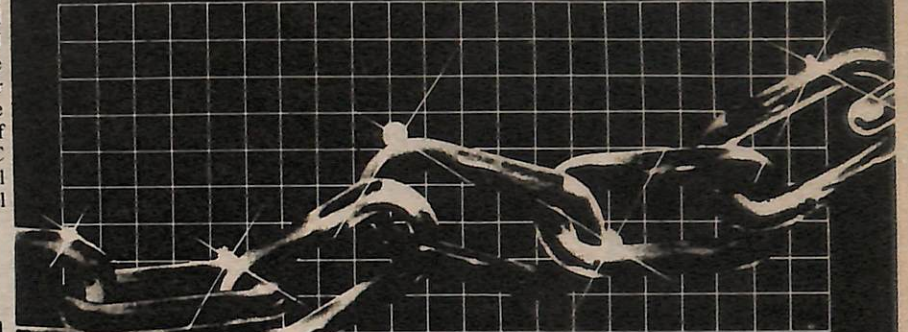
new line value and the RETURN key pressed. The line is automatically repeated - NO RETYPING is required.

The CBM 8000 series also has functions such as scrolling windows with programmable top and bottom window corners. Text can be scrolled up and down, lines deleted and inserted and parts of the line erased to and from the cursor position.

All these editing features are available in direct mode. Life can be easy.

The Link

THAT JOINS ALL OFFICE FUNCTIONS



Get it all together
with the Silicon Office.

STORING AND RETRIEVING INFORMATION - CREATING, EDITING AND PRINTING OF TEXT - MATHEMATICAL CALCULATION - COMMUNICATING INFORMATION LONG DISTANCE.

Silicon Office is the first database management system for Commodore CBM Microcomputers whereby up to six files may be open and accessed simultaneously during a run. It is also the first system which permits intercommunication with fellow machines and user. The Silicon Office turns the CBM 8032 into a secretarial work station capable of emulating any application package the user cares to think of.

Now one program which is continuously and completely resident in the memory of the CBM is capable of performing all functions required to run a small business or office. This can mean anything from Accounting and Stock Control to Word Processing, Statistical analysis, mailing lists and information filing - all at once, if necessary. Combine filing cabinets, ledgers, typewriter and calculator in your office into one efficient unit.

The Silicon Office package comprises of three integrated elements: a sophisticated word processor, a flexible database management system and an option for inter computer communications - all in one memory resident program.

\$8490

- 8023 DOT MATRIX/PSEUDO PRINTER
- COMMODORE CBM 8032 COMPUTER
- 8050 DISC DRIVE UNIT
- 64K ADD-ON MEMORY BOARD (TOTAL 96K RAM)
- THE SILICON OFFICE PROGRAM MASTER DISC
- TWO SECTIONAL A4 MANUALS

This package is available from:

Compute CBM SYSTEMS

5 PRESIDENT AVE., CARINGBAH ☎ 525 5022

COMAL COMman Algorithmic Language

The programming language COMAL was defined by Borge Christensen and Benedict Loefstedt in 1974. COMAL was designed as an extension of BASIC to facilitate teaching structured programming to non-expert programmers, combining the simplicity of BASIC with the algorithmic structure of Pascal. The Danish based COMAL working group released a COMAL-80 Nucleus specification for the language in 1979 which has become the standard for all implementations of COMAL.

COMAL has replaced BASIC as the first programming language in Danish schools and has prompted a vigorous debate amongst english computer educators about the merits of BASIC as a first programming language. COMAL users argue that the uncontrolled use of the 'GOTO' statement by novice programmers and the lack of adequate control structures make BASIC unsuitable as a language to teach programming.

COMAL is a three pass interpreter that maintains the interactive mode, dynamic editing and easy to use I/O statements of BASIC, with adequate control structures and facilities to promote a structured approach to programming.

The COMAL environment editing commands include LIST, EDIT, DEL, AUTO, RENUM

and indented listing of program code. The following structures illustrate the strength of COMAL

```
IF <expression> THEN
  <statements>
ELSE
  <statements>
ENDIF

CASE <expression>
WHEN <expressionsA>
  <statementsA>
WHEN <expressionsB>
  <statementsB>
OTHERWISE
  <statements>
ENDCASE
```

```
WHILE <expression> DO
  <statements>
ENDWHILE
```

```
REPEAT
  <statements>
OF UNTIL <expression>
```

```
PROC <procedure name>
  <statements>
ENDPROC <procedure name>
```

COMMODORE CBM COMAL

Commodore has supported the implementation of COMAL-80 for Commodore CBM computers by Mogens Kjaer in Denmark. This implementation, COMAL-80 v00.11, contains the COMAL-80 Nucleus with extensions and has been released into the public domain worldwide.

In Australia a COMAL package is available from all Commodore Dealers for the 4032 and 8032 computers in 4040 and 8050 disk formats. It includes COMAL, many example programs and a copy of the COMAL-80 survey, detailing all COMAL commands. The availability of the COMAL source and the widespread use of Commodore computers in english schools has ensured support for

COMAL. Several disks of COMAL software and extended versions of COMAL, including a version for the 8096 and a cassette based 4032 version are available from user groups.

Ellis Horwood have released two COMAL textbooks, Roy Atherton's introductory textbook (Structured Programming with COMAL) and Borge Christensen's textbook with student guides (Beginning COMAL), that are suitable for use as introductory programming texts in secondary schools.

Systems programmers who are interested in working with the COMAL source or system documentation and the COMAL-80 Nucleus definition should contact the Software Manager at COMMODORE INFORMATION CENTRE.

ADVANCED SCREEN EDITING

One of the most popular features of all Commodore computers is the advanced screen editing.

All keyboards have cursor control keys which move the cursor in the required direction. In

addition, there is an INSERT and DELETE key, which, when the cursor is positioned, allow the text to be opened up or reduced according to the number of keystrokes.

One of the main applications is in

No special editor is required to correct lines. In fact this feature on all Commodore machines makes the duplication of lines easy. If the same line of instructions is to be repeated elsewhere in the program, the line number is edited for the

AUSTRALIA'S largest personal computer
Software distributors.

National distributors and manufacturers of
Software products to micro computer dealers.

COMMODORE VIC SOFTWARE

now available

through your local VIC-20 Dealer

IMAGINEERING (02) 358 3011



IMAGINEERING

"your software professionals"

CASH REGISTER TERMINAL ANNOUNCED

H.B.E. have announced the release of their data capture Cash Register. Designated the Model 6006, it is based on the highly successful Commodore 4032 computer.

The system uses the very flexible BASIC program language of the CBM 4032, to create a program which may be tailored to the users individual needs. Data is captured on CBM compatible cassettes for subsequent processing through a full scale Commodore system. This processing can include automatic posting to debtors accounts, stock updates and sales analysis recording.

The compact 6006 Cash Register is self contained and plug compatible to the CBM 4032, using the standard IEEE port, user port and either cassette port. Power supply is inbuilt, and the unit has a seperable 240 V plug. Automatic cash drawer opening is provided for under program control, and a "drawer open" test is available. The cash drawer is of metal construction, with large standard plastic drawer insert.

Data is collected on the integral C2N cassette unit, and may be formatted to the users requirements.

Customer ticket printing is performed on a standard 57mm x 57mm tally roll by the inbuilt printer.

Hopwoods are marketing the 6006 Data Register as a complete unit (including 4032 computer), or as an "add-on" to an existing system. Price for the complete unit (including 4032) is \$3,595.00 including tax. Included in this price is a 'skeleton' program which may be used as is, or altered by any CBM dealer.

VIC 1540 DISK DRIVE

Connected to the VIC-20 via the serial port, the VIC 1540 provides economical floppy diskette storage. The diskettes are compatible with the CBM 2031 and CBM 4040 diskettes to allow the interchange of programs and data between the various computers in the Commodore range.

STORAGE

Total capacity	174848 bytes per diskette
Sequential	168656 bytes per diskette
Relative*	167132 bytes per diskette
	65535 records per file
Directory entries	144 per diskette
Sectors per track	17 to 21
Bytes per sector	256
Tracks	35
Blocks	683 (644 blocks free)

IC's:

6502	microprocessor
6522(2)	I/O, interval timers
Buffer	
2114(4)	2K RAM

PHYSICAL:

Dimensions	
Height	97 mm
Width	200 mm
Depth	374 mm

ELECTRICAL

Power requirements	
Voltage	240 VAC
Frequency	50 Hz
Power	25 Watts

MEDIA:

Diskettes	Standard mini 5¼", single sided, single density
-----------	---

* Although VIC-1540 is designed with a capability to handle relative files, it cannot be used with the current version of VIC-20 personal computer.

VIC DATA CASSETTE

Standard audio cassette tapes can be used with the Data Cassette recorder due to the high reliability and the recording method employed with this unit.

Programs and data can be stored on cassette and programming is very simply with Commodore BASIC. Features such as motor on/off control and key switch sensing, allow the user much control over this cassette unit.

The Data Cassette plugs into the cassette port of the VIC-20 computer and is supplied with all necessary connectors and cables.

VIC 1010 MEMORY EXPANSION

This unit plugs into the memory expansion bus at the rear of the VIC-20 computer.

Six slots are provided to take up to six cartridges such as memory expansion, Programmers Aid, various games etc.

Power is supplied to the VIC 1010 by a mains cable and no other accessories are required to connect to the VIC-20 computer.

SPECIFICATIONS

Input Voltage	220-240 VAC 50 Hz
Power	5.05 VDC, 7A
Temperature	0-40 degrees C
Humidity	40-85%
Dimensions Depth:	235mm (Body 187mm, Edge 48mm)
	Width: 397mm
	Height: 53mm

Weight 1.66Kg

VIC 1515 PRINTER

This low cost printer connects to the VIC-20 serial port with a cable supplied with the unit.

Specifications

1. General Specifications	
Print method	Impact dot matrix print (uni-hammer method)
Character Matrix	5 x 7 dot matrix
Characters	upper/lower case characters, numerals symbols, and PET graphic characters
Graphics	Dot addressible. 7 vertical dots per column, max 480 columns.
Character codes	VIC-20 8-bit code
Character size	Height: 7 dots (2.82 mm) Width: 5 dots (1.76 mm)
Print speed	30 characters/sec (left to right, uni-directional)
Max. number of columns	80 columns
Character spacing	12 characters/inch
Linefeed spacing	6 lines/inch Character mode 9 lines/inch Graphic mode
Linefeed speed	5 linefeeds/sec Character mode 7.5 linefeeds/sec Graphic mode
Paper feed	Pin feed
Paper Width	4.5 to 8 inches acceptable
Multiple copies	Original plus 2 copies
Inked ribbon	Single colour, inked roller built-in cassette type
External dimensions	172.5D x 328W x 132 H mm
Weight	Approximately 2.5 kg
2. Operating Environment	
Power requirements	220 - 240V, 50 Hz
Power consumption	15 watts max. (character printing) 0.5 watts (idling)
Temperature	0-54 degrees C
Humidity	20% - 80% (no condensation)

VIC SOFTWARE

There is a vast library of VIC software available from various sources. Your Commodore Dealer will be able to advise you of the programs available. Supplied by Commodore are the following programs:-

CODE NO	DESCRIPTION	RETAIL PRICE
---------	-------------	--------------

TEACH YOURSELF PROGRAMMING SERIES

This 5-part series of tapes and manuals provides a self-teaching course in computer programming, from introductory BASIC to 6502 Machine Language Programming.

VL 101	Introduction to Computing Sample programs in book and on tape making this an interesting introduction for the non-computerist. Stresses "computing", not "programming."	29.95
VL 102	Introduction to BASIC Programming A gently but thorough introduction to BASIC programming. Excellent first book for any new computerist.	29.95

RECREATIONAL GAMES ON CARTRIDGE

VIC 1901	VIC AVENGER It's an invasion of space intruders and you're the VIC "Avenger." Space action for arcade enthusiasts.	39.95
VIC 1902	VIC STAR BATTLE An exciting multi-directional "Avenger" style game - watch for the surprise mass attack!	39.96
VIC 1904	SUPERSLOT Colourful slot machine game works just like the real thing! Great music and sound effects!	39.95
VIC 1905	JELLY MONSTER Quick reactions needed in a maze where jelly monsters try to eat you before you eat them! Similar to the popular game 'Pacman'.	39.95
VIC 1906	VIC SUPER ALIEN You're trapped in a maze and your only defense is the "alien buster". Can you capture the aliens before they zap you?	39.95
VIC 1907	SUPER LANDER Pilot your "Jupiter Lander" through the treacherous crevices of a mysterious planet. Variable rocket thrust, anti-gravity, horizontal retros.	39.95
VIC 1908	DRAW POKER Casino-style poker recreates the real thing! Superb animation and sound effects add to the fun, mystery and luck.	39.95
VIC 1909	ROAD RACE Authentic night driving simulation provides thrills, chills and spills? An unusual computer challenge.	39.95
VIC 1910	RAT RACE Race through a maze. Challenging game of action. Requires quick reactions.	39.95
VIC 1919	SARGON CHESS Play chess with the VIC-20 computer at various skill levels to suit players from novice to pro.	39.95

COMPUTER PROGRAMS ON TAPE

The following prerecorded programs are designed for use with the Commodore Datasette Tape Recorder.

VT 106	A Recreation Program Pack A (Contains all six programs listed below) Car Chase - Fast-paced road action VIC 21 - Casino-style blackjack Blue meanies from Outer Space - Space game Biorhythm/Compatibility - Compare biorhythms Spacemath - Math improvement grades 1-6 Slither/Super Slither - dexterity game	75.00 14.00 14.00 14.00 14.00 14.00 14.00
VT 107	A Home Calculation Program Pack A (Contains all six programs listed below) (April-May) Personal Finance I - Home budget Personal Finance II - Home budget VIC Typewriter - Word processor for home use Expense Calender - Income, expenses, appointments Loan & Mortgage Calculator - Decision-making aid Home Inventory - Home belongings list	75.00 14.00 14.00 14.00 14.00 14.00 14.00
VT 164	Programmable Character Set/Gamegraphics Editor Let the VIC user create up to 64 programmable characters and use them in BASIC programs. The Editor takes only one-half kilobyte of program space, works with tape, disk and printer.	25.00

"Why buy just a video game when you can get a full colour computer for this price."

A computer like this would have been science fiction a few years ago. Now it's a reality. It's the Commodore VIC-20, a full-fledged, expandable colour computer that costs little more than video games.

Everybody loves video games and the VIC-20 has some of the best. But the Commodore VIC-20 can also help the kids with their homework and mum with her budgeting. Dad can even take the light, portable VIC-20 to the office for financial and business applications.

And Commodore has many more applications on the way.

With Full Capability For:

- Education programs
- Recreational programs
- Personal computing
- Includes Microsoft, PET BASIC
- Full-size typewriter-style keyboard
- Easy to follow instruction manual
- Memory expansion to 32K RAM
- Connects to any TV set
- 66 graphic characters
- 25K total memory
- 4 sound generators
- 16 colours



The computer for everyone.

The VIC-20 is the friendliest way we know to learn computing. It has a full computer keyboard even a small child can operate.

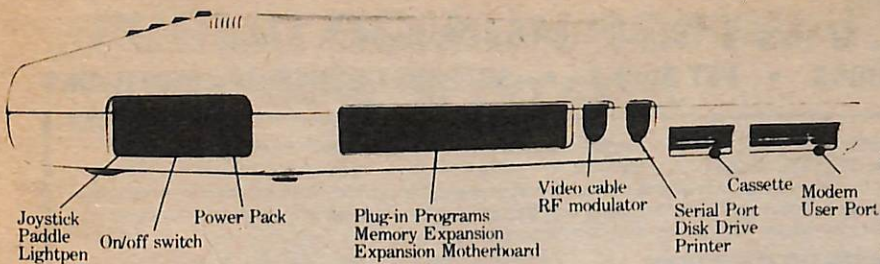
It plays music, has exciting graphics and lets you create pictures. It even tells you when you've made a mistake and how to correct it. The VIC-20 can take your children from pre-school through post-graduate studies.

Why get just another game that could end up in the closet? Get an honest-to-goodness computer for just \$399. Get the Commodore VIC-20.

Learn more about Commodore, the micro-computer you can depend on. Call or write for the name and location of your Commodore dealer nearest you.

The Commodore Information Centre,
3 Campbell St., Artarmon NSW 2064. Phone: 437 6296.

commodore
COMPUTER



VIC20 Colour Computer

Specifications

PROGRAMMING FEATURES

6502A microprocessor.
Up to 88 characters per line with multiple statements per line.
Programmable clock.
9-digit floating point arithmetic.
True random number generator.
BASIC Interpreter available after powering on.
High resolution multicolour graphics.

INPUT/OUTPUT

8 bit parallel port.
Serial output port.
Games for Joystick, Paddle and Lightpen.
Memory Expansion port.
Cassette port.
Video and audio output port.
RS232C interface available.

KEYBOARD

62-key typewriter style keyboard with graphics capabilities.
4 function keys with eight programmable functions.
Colours are directly addressable from the keyboard.
Cursor control keys and text edit keys standard.
Two control keys to control 64 graphics characters.
Repeat key function on space bar, insert delete and cursor control keys.
Other keys can be programmed to repeat.

VIDEO OUTPUT

Composite, PAL colour standard, video output.
Connects directly to TV monitor or RF modulator.
RF modulator provides dual television channel signal.

DISPLAY

22 characters by 23 lines.
Upper and lower case characters.
128 ASCII characters plus 128 graphics characters.
Programmable characters.
High resolution.
Maximum resolution 176 by 184 pixels (32, 384 in total).
Reverse character display for highlighting.
8x8 character matrix for each character.

COLOURS

8 character colours.
8 boarder colours.
16 screen colours.
Colour selection available from program keys is:
black, white, red, cyan, purple, green, blue, yellow

SOUND

3 Tone generators for music.
Each generator gives 3 octaves.
White noise generator for music and sound effects.
Reproduction is through TV speaker or external amplifier.

MEMORY

RAM (Random Access Memory)
5K bytes (expandable to 32K bytes)
ROM (Read Only Memory)
20K bytes (expandable with plug-in cartridges).

COMMODORE BASIC COMMANDS/FUNCTIONS

ABS	ASC	ATN	CHS	CLOS
CLR	CMD	CON	COS	DATA
DEF FN	DIM	END	EXP	FN
FOR...NEXT	FOR	GET	GET#	RETURN
GOTO	IF...THEN	IF...GO	INPUT	INPUT
INT	LEFTS	LEN	LET	LIST
LOAD	LOG	MID	NEW	ON...GOSUB
ON...GOTO	OPEN	PI	PUR	PUR
PRINT	PRINT#	READ	REM	RESTORE
RIGHTS	RND	RUN	SAVE	SIN
SIN	SQR	SQR	STAT'S	STOP
STR\$	SYS	TAB	TAN	TIME
TIMES	USR	VAL	VERIFY	WAIT

POWER REQUIREMENTS

Volts : 240 VAC
Cycles: 50 Hz
Watts : 25 W

PHYSICAL SIZE

Height: 70 mm (2 1/2 inches)
Width : 405 mm (16 inches)
Depth : 200 mm (8 inches)
Shipping Weight: 4.2kg (9 1/2 lbs)
Shipping Volume: 580 x 260 x 110mm (23 x 10 1/4 x 4 1/4 inches)

VIC CARTRIDGES



INTERFACING

The VIC-1011 RS232C ADAPTER is available in two types:

- VIC-1011A TERMINAL TYPE
- VIC-1011B CURRENT LOOP TYPE

The VIC-1011 RS232C ADAPTER has a standard connector so that it can be used for data communications by being connected directly with an acoustic coupler or a modem.

The VIC RS232 interface is in conformity to the EIA STANDARD (Aug. 1979).

The cartridge is inserted into the user port of the VIC-20 personal computer.

The VIC-1011 RS232C adapter has the following two operation levels:-

- 1) BASIC level,
- 2) Bit/Byte handler of machine language level.

BASIC Level

When using the VIC-1011 RS232C adapter at the BASIC level, the standard I/O commands of CBM BASIC (OPEN, CLOSE, CMD, INPUT#, GET#, PRINT#) and the special variable ST are used.

Also, it can be linked with machine language programs for more sophisticated communications and the further expansion of its operating range.

Bit/Byte Handler

RS232C bit/byte level handler operates under the control of VIA (Versatile Interface Adapter), MPS6522 device timers and interrupts. It executes the RS232C protocol while the execution of the BASIC and machine language programs are in progress.

A detailed booklet is supplied with the cartridge to provide information on setting up the cartridge and how to program the VIC-20 to use the RS232C interface.



PROGRAMMERS AID

This cartridge helps new and experienced programmers write, edit, crunch and debug BASIC programs.

This cartridge adds more than 20 special editing commands to the VIC instruction vocabulary and

gives an easy method of redefining the VIC's programmable function keys.

If you are an experienced programmer, you already know how helpful it is to automatically number and renumber program lines, delete and insert segments, view program lines as they run, jump to commands or character strings and use the VIC special function keys to increase your programming power.

If you are beginning programming, the Programmers Aid cartridge will make it easier to write programs, understand how they work, and find and correct errors.



SUPER EXPANDER

This cartridge adds an entirely new set of colour, graphics, plotting, music and function key commands to the VIC vocabulary and adds 3K extra memory to load and run larger programs.

Graphic shapes can be plotted, colours 'painted' on the screen, music written and much much more.

The commands and functions work just like BASIC commands. In addition, most of the new commands are pre-assigned to the special function keys.

A valuable cartridge for those who want to develop all the special features of the VIC-20 computer.



MACHINE LANGUAGE MONITOR

When the VIC-20 is turned on, the computer is in 'READY' mode and will accept instructions to run a BASIC program.

BASIC text is converted by the interpreter into machine code instructions which the microprocessor can respond to. If programs are written directly in machine code, faster running speeds will be obtained.

Detailed instructions on machine language programming can be found in the VIC-20 Programmers Reference Guide.

The VIC MON cartridge also allows the user to construct 6502 machine code programs and includes a one line assembler/disassembler.

MEMORY EXPANSION

The VIC-20's user memory can be simple expanded by plugging in one of the memory cartridges.

The cartridges are available in 3K, 8K and 16K segments and can be configured to work together when using the VIC 1010 expansion unit.

PROGRAMMERS REFERENCE GUIDE

The VIC-20 Friendly Computer deserves a friendly reference book.

The VIC-20 PROGRAMMER'S REFERENCE GUIDE is a book that gives you more information about the VIC-20 computer than

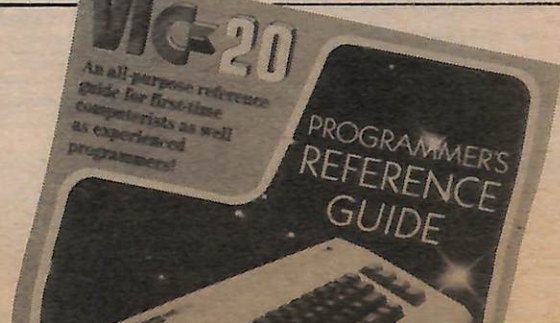
any other source. This guide was compiled from the experience of Commodore's international programming staff and is designed to be used by first-time computerists as well as experienced programmers. Four sections cover the most

areas of interest: BASIC programming, Machine Language programming, Input/output interfacing and programming graphics and sound. Many ideas help the programmer to utilise the many features of the VIC-20 computer, such as;

- ★ Complete dictionary including BASIC commands with example programs on how they work.
- ★ A laymans overview to machine level programming, to get started.
- ★ The Kernal is explained to ensure that programs written today will not become outdated.
- ★ Interfacing is explained to allow computer expansion.

- ★ Graphics, colour and sound are all explained including the unique 'multi-colour' mode.
- ★ POKE's will be discovered that were not previously known and the memory maps will show you places you never knew existed.

If you have the VIC-20 then you will find the Programmers Reference Guide a must. Available from your Commodore Dealer.



COMPUTE SYSTEMS

- Supporting a range of Commodore products

One of the more successful Commodore Dealers in NSW is a Company called Compute CBM Systems, who are based in the southern centre of Sydney, Caringbah. Compute provide system support, sales and service to individual sales and their various vertical markets.

Compute have had wide experience in the micro computer industry having previously being involved in the mini computer market. The senior partners in the Company are Graham O'Neill who is responsible for sales and marketing, and Graham Nutt who looks after the technical and programming side of the business. The partners are generally known as the two "Grahams" and at times is quite confusing when enquiries just ask for Graham.

The Grahams present their business in a very professional manner and are well respected by fellow dealers and clients for their integrity and professional services. To support this reputation, Compute recently opened what must be, one of the best looking micro computer showrooms of the Commodore computer range in Australia. As Graham O'Neill stated "The object of opening such a showroom was to allow the prospective purchaser the opportunity to touch and use micro computers in a quiet and relaxing atmosphere without the hassles of sales staff hanging around and pestering the client for a quick sale." Mr O'Neill continued "We have found that their are a lot of semi and professional business persons who like to be treated accordingly. We believe in sitting down with the customer and discussing with the client firstly his needs and problems, then working out and offering a solution. Today in the micro sale industry, too many sale orientated people offer the solution first without identifying the exact needs and unfortunately create many unhappy computers users."

This determination by Compute to understand the needs of the client has been one of the many reasons for their success. Part of Compute's

work is involved in the commercial and industrial aspects of micro computers. To handle the various skilled areas that Compute is involved in, specialist consultants are engaged to provide qualified professional services in such areas as engineering, communications, accounting, finance, insurance and systems design. Altogether Compute have seven such specialist consultants and together form a very strong sales support team for Compute's activities.

With Compute's vertical market work, a lot of design and technical development was undertaken by their engineering staff at an early stage of their involvement with Commodore. Armed with such knowledge, Compute tackled the technical markets and are now highly represented in the Universities, CSIRO and Government Defence Departments. Such areas of sales involvement require good support both technically and in professional service. Compute's continued growth in these areas would be indicative of their Companies ability to meet the demands of the professional micro computer market.

To assist the domestic and commercial micro computer expansion

into the education market, a special computer school was recently opened. Compute's short term object is to assist in the much needed education of the prospective computer user. Class sizes at the school are limited to a maximum of twelve students per course. This is to allow each student the opportunity of having his/her own computer for "hands on" experience during the lectures as well as receiving tuition where required. Lecturing is supported by Compute's programming staff and due to the quality and success of the school, bookings are now required to be at least two months in advance.

Direction

Where does Compute see the micro computer industry going? Mr O'Neill summarised by saying "We have over the last two years seen the real growth and introduction of the power and potential of microcomputers into the Australian market place. In many cases, the demand on various products caught a few of the manufacturers and importers by surprise. The industry has gone through its introduction stage and it will be over the next two to five years that the consumer will really see the effect of the micro either in his/her

work place or in their personnel living environment. As far as marketing is concerned, we see the micro industry splitting into two, possibly three, distinct areas. Firstly, the very aggressive and competitive consumer market where computers will cost anything from \$50.00 to possibly \$1,000.00. Secondly, the bottom half of the commercial or business market, where the purchaser knows what he wants and basically is only interested in buying brown boxes, naturally at the right price, plus specific software packages that are already available to satisfy specific applications. This buyer will require limited after sales support. The third market area will always be around. That is the buyer who wants a computer facility but requires specialist advice and expertise to assist in locating the needs and then offering a suitable solution. Continued support to this type of buyer will always be required.

We can see that in the near future, that in a majority of cases, the first market area and possible part of the second market will be catered for by the large retailers like Myers, Grace Bros etc. The second market area and to a certain degree part of the third area will be supported by the micro dealer who will generally only be able to offer support on the premises. The majority of the third market will be catered for by micro dealer specialists, who have an "on road" sales support service. Because of Compute's expertise, we can only see ourselves staying in the last market area. Why get caught up and involved with the large retailers in trying to compete for the same consumer dollar. Compute will stick to what it knows best. That is professional marketing of business systems, where we can offer a service and backup support that very few dealers could compete with."

A very interesting perspective by Graham on the micro computer market, and no doubt will ensure that Compute remains one of Australia's leading Commodore Computer dealers.



A brief illustration of Compute's air conditioned, spacious showroom displaying the full range of Commodore products and accessories.

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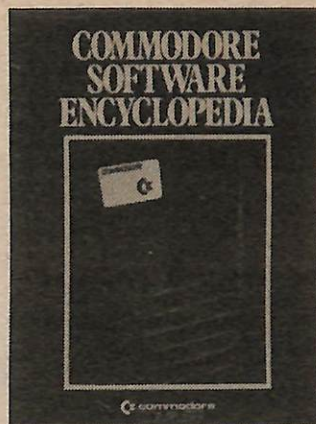
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- ★ Business including Accounting, Inventory, Real Estate, Payroll, Mailing Lists, Financial Modelling
- ★ Word Processing
- ★ Utilities
- ★ Engineering Aids
- ★ Personal Aids
- ★ Games
- ★ VIC-20
- ★ Publications
- ★ Software Vendors
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This book has been published by Commodore in the U.S.A. and provides a catalogue of many programs not previously seen in Australia.

Whether you are interested in personal computers or own

a Commodore, this publication can be an invaluable aid in locating the right software package for you. The Commodore Software Encyclopedia is available from your Commodore Dealer.

COMMODORE MAGAZINE

This is published by Commodore in Australia and informs readers of all the developments in the Commodore world. Announcements of new products, product details, programming information, memory maps, software packages available, are all detailed in the Commodore Magazine.

The content is varied to suit the many types of readers that already subscribe to the Commodore Magazine.

Products covered include the VIC-20 and the CBM range of computers.

If you are already a Commodore owner, or if you plan to be, then the Commodore Magazine is essential reading.

Subscriptions can be obtained from your Commodore Dealer, or see the advertisement on page 3.



Prentice-Hall, Howard W. Sams & Reston

VIC BOOKS • PET BOOKS • SUPERPET BOOKS • 6502 BOOKS

VIC BOOKS

A User-Friendly Guide

Here's how to effectively combine colour, sound and graphics on the Commodore Vic. It's a comprehensive collection of VIC BASIC programs for the beginner and experienced programmer alike the only tutorial you'll need to gain proficiency with the VIC. \$19.25

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An easy-to-use, detailed manual that helps you to program your VIC like a pro! Includes a complete VIC 20 BASIC vocabulary guide, a section on machine language programming, a programming tips guide with suggestions for improving your skills, and a special section on VIC 20 input/output operations. Written by Commodore Computer Staff. \$25.25

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Richard Haskell shows you how to actually write programs in BASIC. For the beginning or advanced programmer, here's how to include sound effects, make bar graphs, use the technique of top-down programming, make 3-D figures and more. Includes photographs from the PET's screen, for every stage explained. \$19.25

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VIC BASIC A User-Friendly Guide

by R. Zamora
Simple VIC BASIC programs are provided with full explanations of how to effectively combine colour, sound and graphics on the Commodore VIC. Available August. \$19.25

VIC Games and Recreations

Adventures with the Rainbow Machine by R. Zamora
As well as puzzles, word games, modular games and mathematics games, this book explains how to design and create your own games. Available August. \$19.25

LEARN COMPUTER PROGRAMMING WITH THE COMMODORE VIC

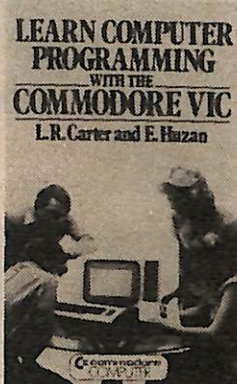
by L.R. Carter and E. Huzan
This book provides a practical grounding in BASIC. Many different applications of the VIC, ranging from colour and sound animations to scientific and business applications, are described. A comprehensive series of exercises, with answers, is provided to help you learn at your own pace. 1982, 160pp, \$8.95

PET FUN AND GAMES

by R. Jeffries and G. Fisher
30 challenging games for PET computers collected by the editors of CURSOR magazine - thoroughly tested and ready to load. \$16.75

VIC PROGRAMMERS REFERENCE GUIDE

Provides a complete VIC 20 BASIC vocabulary guide, a section on machine-language programming, a programming tips guide with suggestions on how to improve your programming skills, and a special section on VIC 20 input/output operations. 1982, 400 pp, \$25.25



SOME COMMON BASIC PROGRAMS

by L. Poole and M. Borchers
76 well-designed and documented programs that solve a variety of problems in statistics, finance, and maths. Easy to use at any level of experience. PET/CBM edition. 1980, 200 pp, \$21.00

THE POWER OF: VISICALC

by R. Williams & B. Taylor

The Power Of: VisiCalc is a book of exercises designed especially for users and potential users of the VisiCalc computer program. By performing these simple step-by-step exercises, you will rapidly gain an ability to utilize the broad range of VisiCalc capabilities. The seven easy to follow exercises are designed to help you understand and use VisiCalc operations for a wide range of applications. This book is an invaluable companion to the VisiCalc program. 1981, 88pp, \$13.95

THE POWER OF: VISICALC, Volume II

by R. Williams & B. King

The Power of: VisiCalc Vol II is a training manual consisting of a series of exercises which are based on VisiCalc Version 3.3. The exercises included are: Accounts Payable; Payroll; Monthly Sales Report; Daily Inventory; and Financial Forecasting. 1982, 97pp, \$13.95

NICK HAMPSHIRE BOOKS

Computer Reference Guide is the exclusive distributor in Australia for all Nick Hampshire Commodore books. Current offerings include:

VIC REVEALED: This book is a collection of discoveries about the VIC, how and why it works, and how to use these facts to write better programs and perform more interesting functions. 1981, 267pp, \$17.95

VIC GRAPHICS: Designed specifically for the VIC and available in Aug/Sept. \$16.95

PET GRAPHICS: Now rewritten and offered in two volumes. Vol 1 now available and Vol 2 due in Aug/Sept. Vol 1 & Vol 2, each \$18.95

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It must be stated that most software is protected by copyright and unless you are sure that you are duplicating Public Domain software, you may infringe copyright laws and be prosecuted.

The concept is to provide users with a range of programs, utilities and languages that are free of charge. However some costs for the duplication, distribution and media may be charged by your Commodore Dealer. This charge should not exceed \$20.00 per diskette. The following Public Domain software packages are available from your Commodore Dealer;

COMMODORE UTILITY PACKAGE
A collection of valuable utilities for data entry, disk patching, screen formatting etc.
Code 310100 - diskette V2C distribution
Code 310102 - diskette V2A distribution

EDUCATION SOFTWARE PACKAGE
A set of 5 diskettes with games, education programs and utilities collected from around the world. Most of these programs are designed to run on 40 column machines.
Code 310105 - diskette V2A distribution only.

COMAL
A language which has the structure of PASCAL and the simplicity of BASIC. Developed especially for Commodore, this language is valuable for

learning structured programming.
Code 310110 - diskette V2C distribution
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COMMUNICATIONS TERMINAL SOFTWARE

Two programs allow terminal connection to a host computer with file and program transfer possible.
Code 310125 - diskette V2A distribution
Code 310130 - diskette V2C distribution

ASSEMBLER DEVELOPMENT SYSTEM

This package contains a detailed reference manual and all supporting programs for developing assembler programs.
Code 310140 - diskette V2C distribution
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and will cater for most software under consideration at this time.

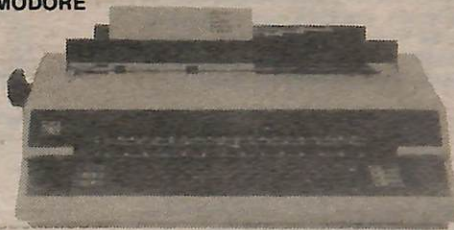
How does the **OPAL PRINTER** adapt to these conditions? simply, the **OPAL** has a computer controlling the input and the printing thus making it a very flexible system. Its flexibility was demonstrated two weeks ago, when the firmware was changed to enable the **OPAL PRINTER** to run under **EUROPEAN CHARACTERS**, a highly desirable feature for overseas marketing.

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HIGH SPEED DOT MATRIX PRINTER

The latest addition to the growing line of **CBM** peripherals is a bi-directional, 136 column printer with both tractor and friction feed. The **8023P** is dot-matrix, and prints 150 characters per second (CPS).

The new **CBM 8023P** printer is designed to operate through software control, prints upper and lower case alphabetic characters, all graphic

characters available with a Commodore computer, as well as user defined characters.

The **8023P** conforms to IEEE interface requirements and connects directly to a Commodore computer via an IEEE cable.

Pseudo letter quality is available by overprinting the characters and is useful where the quality of report presentation is important. Condensed print is an option allowing column

widths up to 250 characters.

Forms width is adjustable from 5 to 15 inches and up to 3 copies including original can be made.

Because the printer is an 'intelligent' peripheral, it uses none of the

computer's memory. In addition, the **8023P** contains Random Access Memory (RAM), which permits storage of formatting data.

The **8023P** runs with all 8000 series software packages.



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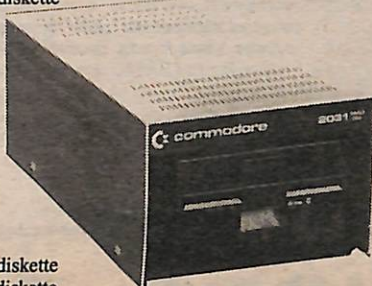
CBM 2031

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Low Cost Single disk drive.

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Total Capacity	- 174,848 bytes per diskette
Sequential	- 168,656 bytes per diskette
Relative	- 167,132 bytes per diskette
Records/file	- 65,535
Directory Entries	- 144 per diskette
Bytes per sector	- 256
Sectors	- 17-21
Tracks	- 35
Blocks	- 664 per diskette



CBM 4040

Total Capacity 340K.

Dual Disk Drive.

5 1/4" single sided, single density floppy diskettes.

Total Capacity	- 174,848 bytes per diskette
Sequential	- 168,656 bytes per diskette
Relative	- 167,132 bytes per diskette
Records/file	- 65,535
Directory Entries	- 144 per diskette
Bytes per sector	- 256
Sectors	- 17-21
Tracks	- 35
Blocks	- 664 per diskette



CBM 8050

Total Capacity 1,060K.

Dual Disk Drive.

5 1/4" single sided, single density floppy diskettes.

Total Capacity	- 533,248 bytes per diskette
Sequential	- 521,208 bytes per diskette
Relative	- 464,312 - 517,398 bytes per diskette
Records/file	- 65,535
Directory Entries	- 224 per diskette
Bytes per sector	- 256
Sectors	- 23-29
Tracks	- 77
Blocks	- 2083 per diskette



CBM 8250

Total Capacity 2,100K.

Dual Disk Drive.

5 1/4" double sided, single density floppy diskettes.

Total Capacity	- 533,248 bytes per diskette
Sequential	- 521,208 bytes per diskette
Relative	- 464,312 - 517,398 bytes per diskette
Directory Entries	- 224 per diskette
Bytes per sector	- 256
Sectors	- 23-29
Tracks	- 77
Blocks	- 2083 per diskette



CBM 9060

Total Capacity 5,000K.

Hard Disk Drive.

Total Capacity	- 6,380,000 unformatted
	- 4,970,000 formatted
Sequential	- full disk capacity
Relative	- full disk capacity
Bytes per sector	- 256
Sectors	- 32
Recording Surfaces	- 4
Tracks	- 153 per recording surface
Blocks	- 19,442



CBM 9090

Total Capacity 7,500K.

Hard Disk Drive.

Total Capacity	- 9,570,000 unformatted
	- 7,460,000 formatted
Sequential	- full disk capacity
Relative	- full disk capacity
Bytes per sector	- 256
Sectors/Track	- 32
Recording Surfaces	- 6
Cylinders(Tracks)	- 153 per recording surface
Blocks	- 29,162



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You know your office is drowning in paperwork. Letters! Reports! Word processing is the obvious answer. And now, Commodore makes word processing affordable for even the smallest office.

All you need is the Commodore **CBM 8032** desktop computer system plus one of our word processing programs. For a modest investment, you get all the features of a sophisticated word processor. You can insert, delete, re-arrange paragraphs, revise as many times as necessary. With no time wasted in hand-typing multiple drafts. Our word processing system Displays 80 characters on a line. Text appears on the screen exactly as it will appear in print. And Commodore's screen editor is the easiest, most versatile to use, with full cursor control. But that's only the beginning. Because the Commodore **CBM** is a versatile business computer that can save you more time, work and money than you ever thought possible.

You can use it for Financial Planning, Data Management and Retrieval, Direct Mail List, Legal and Medical Accounting and Portfolio Management.

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	CBM 8032
Price: Under \$7,000.00	✓
Computer Memory (RAM + ROM): Total = 50K	✓
80 Characters Per Line	✓
Built-in Green Display Screen	✓
Separate Numeric Keypad	✓
Standard Upper & Lower Case Characters	✓
5 1/4" Dual Disk Storage Capacity - 1,000,000 Characters	✓
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Over 250,000 Desk-Top Computers Sold World-Wide	✓
Over 100 Software Packages	✓
Over 23 Years in Technology	✓

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CBM PRODUCTS

VIC PRODUCTS

Product	Description	Retail (A\$)
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CBM 4016	System with graphic keyboard and numeric keypad. 12" display, 40 column x 25 line display. 16K RAM, BASIC 4.0	1,199.00
CBM 4032	As per CBM 4016 but with 32K RAM.	1,779.00
COMMODORE BUSINESS COMPUTER RANGE - 8000 Series		
CBM 8032B	Typewriter-style keyboard, numeric keypad, 80 column X 25 line display. 32K RAM, BASIC 4.0	2,249.00
CBM 64K MEMORY EXPANSION BOARD	Expands CBM 8032 to 96K RAM.	619.00
CBM 8096	As per CBM 8032B but with 96K RAM.	2,899.00
COMMODORE ADVANCED COMPUTER RANGE - 9000 Series		
SuperPET COMPUTER SP9000	Enhanced CBM 8032 with additional 6809 microprocessor, total 134K memory including 96K RAM. Includes Waterloo interpreters; microBASIC, microAPL, microPascal, microCOBOL, microFORTRAN and 6809 Assembler.	3,990.00
COMMODORE PERIPHERALS		
Disk Drives		
CBM 2031 SINGLE DISK	Single drive intelligent 5.25" disk system. Total 170Kbytes (DOS 2.6)	749.00
CBM 4040 DUAL DISK	Dual drive intelligent 5.25" mini-floppy disk system. Total 340Kbytes (DOS 2.1)	1,779.00
CBM 8050 DUAL DISK	Dual drive intelligent 5.25" mini-floppy disk system. Total 1.0Mbytes (DOS 2.5)	2,399.00
CBM 8250 DUAL DISK	Dual drive intelligent 5.25" mini-floppy disk system. Total 2.0Mbytes (DOS 2.7)	2,899.00
CBM 9060 HARD DISK	Hard disk drive using Winchester technology. Total 5.0Mbytes (DOS 3.0)	3,950.00
CBM 9090 HARD DISK	Hard disk drive using Winchester technology. Total 7.5Mbytes (DOS 3.0)	4,450.00
Printers		
CBM 4022 PRINTER	80 Column printer with tractor feed. Prints full PET graphics, variable line spacing, and programmable characters.	1,129.00
CBM 8023P PRINTER	136 Column, Dot-Matrix, 150 CPS, bi-directional, supports graphics.	1,709.00
CBM 8300 PRINTER	132 Column Letter Quality Daisy Wheel Printer. Approx 30 characters per second.	3,000.00
CABLES		
PET-IEEE	Used for connecting one peripheral to any PET/CBM computer.	79.00
IEEE-IEEE	Designed to connect more than one peripheral to any other peripheral.	79.00

Code No.	Description	Retail (A\$)
HARDWARE		
VIC-20	VIC-20 - The Friendly Computer Commodore's revolutionary personal computer features colour, graphics, programmable function keys, built-in BASIC, expandable memory, low-priced peripherals and more! Connects to any TV or monitor. Includes RF modulator, cables and self-teaching instruction book.	399.00
VIC 1530	Commodore Data cassette Provides handy economical storage of user written or pre-recorded programs using ordinary audio cassettes. Works like standard cassette recorder, includes tape counter.	99.00
VIC 1540	VIC 1540 Single Disk Drive Fast, high capacity storage and retrieval of data on standard 5.25" floppy diskettes. Stores up to 170K on each diskette, with read/write compatibility with PET/CBM systems.	699.00
VIC 1515	VIC Graphic Printer Economical dot matrix printer makes paper copies of BASIC programs, letters, business data, and graphic displays. Connects directly to the VIC, prints all characters including letters, numbers and graphics. Prints 80 columns wide, 30 characters per second. Reliable tractor feed mechanism. Accepts sprocketed 8-inch roll or sheet paper.	479.00
VIC 1010	VIC 1010 Expansion Module Lets you plug in up to 6 separate Memory Expansion Programs and Interface Cartridges.	199.00
SPECIAL CARTRIDGES		
VIC 1210	VIC 3K Memory Expander Cartridge Plugs directly into the VIC's expansion port, expands memory to 8K RAM total.	49.95
VIC 1110	VIC 8K Memory Expander Cartridge 8K RAM expansion cartridge plugs directly into the VIC.	79.00
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VIC 1011A	RS232C Terminal Interface Provides interface between the VIC 20 and RS232 telecommunications modems. Connects to the VIC's user port.	79.00
APPLICATIONS SOFTWARE ON CARTRIDGE		
VIC 1211A	VIC 20 Super Expander Everything Commodore could pack into one cartridge -3K RAM memory expansion, high resolution graphics plotting, colour, paint and sound commands. Graphics, text multicolour and music modes. 1024 X 1024 dot screen plotting. All commands may be typed as new BASIC commands or accessed by pressing one of the VIC's special function keys. Includes tutorial instruction book. Excellent for all programming levels.	69.00
VIC 1212	Programmers Aid Cartridge. More than 20 new BASIC commands help new and experienced programmers renumber, trace and edit BASIC programs. Trace any program line-by-line as it executes, pause to edit. Special KEY command lets programmers redefine function keys as BASIC commands, subroutines or new commands.	59.95
VIC 1213	VICMON Machine Language Monitor Helps machine code programmers write fast, efficient 6502 assembly language programs. Includes one line assembler/disassembler.	59.95

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